Plastics

DEALING WITH THE MANUFACTURE, USES AND POTENTIALITIES OF PLASTIC MATERIALS

TECHNOLOGY DEPT.

Made by TEK PLASTICS Limited
TORONTO

Gelati Motta

All over the world

—'PERSPEX' sells the goods

'Perspex' is pre-eminent for advertising display signs that must be tough, good-looking and stand up to every kind of weather. 'Perspex' is available in clear and opal sheet or in a wide range of transparent, translucent and opaque colours. It is ideal for any job where lightness in weight, strength or transparency are important, and where novelty of design needs to be exploited, as in the Messerschmidt tri-car shown below.

The 'Perspex' signs illustrated are Canadian, Peruvian, Italian and Indian . . . which only goes to show: 'Perspex' stands for quality in any language.

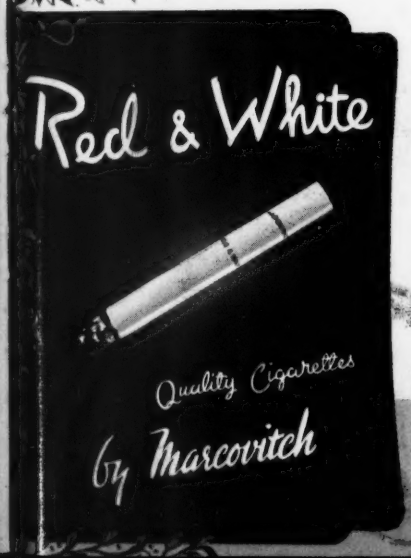
'PERSPEX'

'Perspex' is the registered trade mark for the acrylic sheet manufactured by I.C.I.

IMPERIAL CHEMICAL INDUSTRIES LIMITED, LONDON, S.W.1.

ICI

P.593.



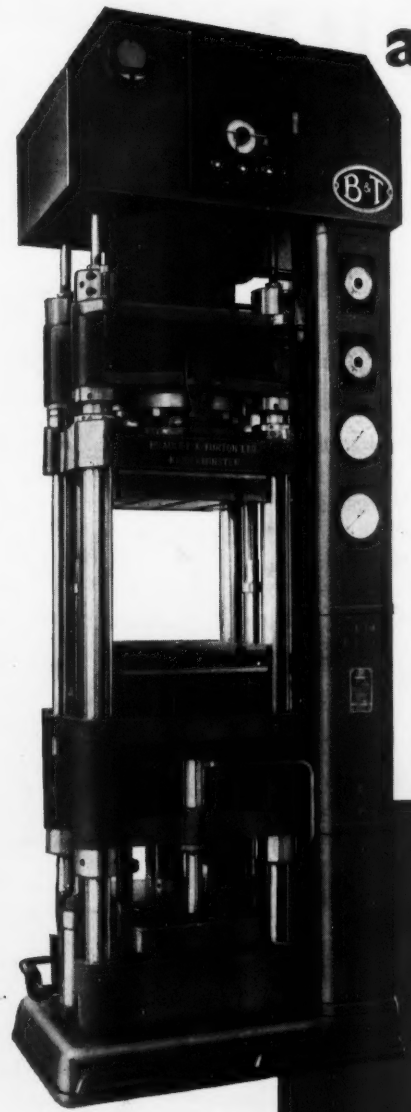
LIBRARY 1953 AUG

TR v.20 Jy-D'55

Tech

'536'

UNIVERSAL MOULDING PRESS ... with push-button automatic control!



Here in one compact self-contained unit is a new advance in precision engineered, auto-controlled moulding presses. The '536' repeats any thermosetting moulding cycle, transfer or compression, including "breathing" and "dwell"—automatically. The operator simply loads the powder and presses a button.

The '536' Type U/1 is fitted with its own motor driven pump unit and only requires the electrical connections to be made for starting up.

It can also be supplied to operate from an accumulator supply.

Changeover from one moulding cycle to another is simplicity itself and can be accomplished in minutes!

Hand operation is provided for tool setting and short run production.

Full details are available upon request. Please ask for leaflet No. 47/23.

Bradley & Turton Ltd

CALDWALL WORKS, KIDDERMINSTER

THE LEADING MANUFACTURERS OF COMPRESSION MOULDING EQUIPMENT

A

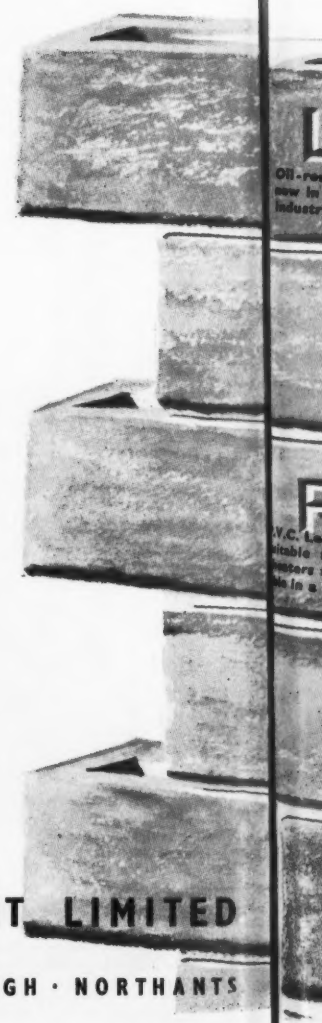
With these bricks

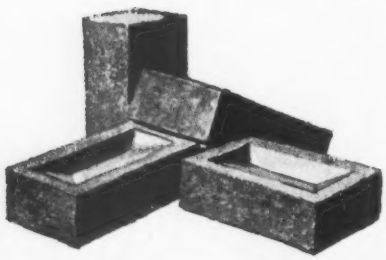
HAVE WE BUILT

WE HAVE KEYED our enterprise to the solid rocks of sound finance and commercial probity; framed it in the true steel of continual investment in the experience and creative imagination of the highest available skills; clothed it steadily with the bricks of tried and tested products.

Building thus, our enterprise has continually grown—but not too fast. And in our building we have helped many other industries and companies to grow. Our products—the bricks of our enterprise—cover many fields: mining, building, clothing, homes and gardens, sports and pastimes, engineering, and a host of others. Our range of products is already wide, and grows wider with every passing year. We should be proud to help you to grow with us.

and we are still building!





RIL

RUBBER IMPROVEMENT LIMITED

RILEX WORKS · WELLINGBOROUGH · NORTHANTS

LEONEX
'Green-for-safety' multiply P.V.C. conveyor belting. The original multiply non-inflammable safety belting.
LEO
LEOLIN
Oil-resistant resin-rubber soling material now in wide use throughout the Footwear industry.
RILITE
Glass-reinforced Plastic Roof lighting—made in all standard corrugations and profiles—now in wide use throughout the Building industry.
RILGLAZE
A glass-reinforced plastic laminate, with good electrical insulation and fire-resistant properties. Possesses high tensile strength and impact resistance.
RILON
'Green-for-safety' multiply P.V.C. conveyor belting, processed with rayon, possessing very high tensile strength and great flexibility.
RILENE
P.V.C. sheeting plain, embossed or printed. Many pleasing shades and finishes for raincoats, curtains, fancy goods.
RIL
Glass-reinforced Plastic in all standard corruga... now in wide use throu... industry.
RILIDE
...V.C. Leather Cloth with fleecy fabric back, ...itable for manufacture of jerkins, wind ...sters and foul weather clothing. Avail... ...le in a variety of colours and embossings.
RILWELT
An extruded P.V.C. Shoe Welting made in all standard sections which is resistant to attack by shoe polishes, mildew, acids and alkali.
RILCREPE
A microcellular soling material with excellent flexing resistance and adhesive qualities. Lighter than natural crepe rubber. Available in a variety of colours and surface patterns.
LEONIDE
A tough, resin-rubber soling material with at least three times the wear of natural leather. Available in castor soles and sheets.
LEOGRIP
A fibrous rubber soling material designed for use in Children's Footwear — incorporates real wool fibres.
LEO
'Green-for-safety' multi... belting. The original n... mable safety belting.

All New HPM

THE WORLD'S *MOST COMPLETE LINE* OF PLASTICS INJECTION MACHINES!

STANDARD INJECTION MACHINES

MODEL NUMBER	150-H-6	300-H-12	400-H-20	800-H-48
Capacity (oz.–Single Feed)	6	12	20	48
Capacity (oz.–Double Feed)	8	16	28	64
Material Injected (cu. in. per min.)	440	1035	1330	2895
Plasticizing Capacity (lbs. per hour)	60	100	135	350
Mould Clamp Capacity (tons)	150	300	400	800
Mould Space (hor. × vert.):				
(*a*) Full Platen Vert.	10½″ × 25″	16½″ × 33″	20½″ × 42″	36″ × 54″
(*b*) Full Platen Hor.	20½″ × 15″	30″ × 20″	36″ × 26½″	54″ × 36″
Daylight Opening without Ram Spacer	20″	30″	40″	55″
Daylight Opening with Ram Spacer	16″	26″	34″	47″
Mould Thickness without Ram Spacer	10″	10″	15″	20″
Mould Thickness with Ram Spacer	6″	6″	9″	12″
Clamp Travel (max.)	10″	20″	25″	35″
Motor Horse-power	20	40	50	100
Shipping Weight (pounds)	14500	22000	39000	75000

NOTE : All ratings based on moulding general purpose polystyrene

Other H.P.M. Models are available with these capacities:—

STANDARD

Model 600-H-32 Capacity 32 ounces.
,, 1200-H-80 ,, 80/100 ,,

PRE-PLASTICIZING

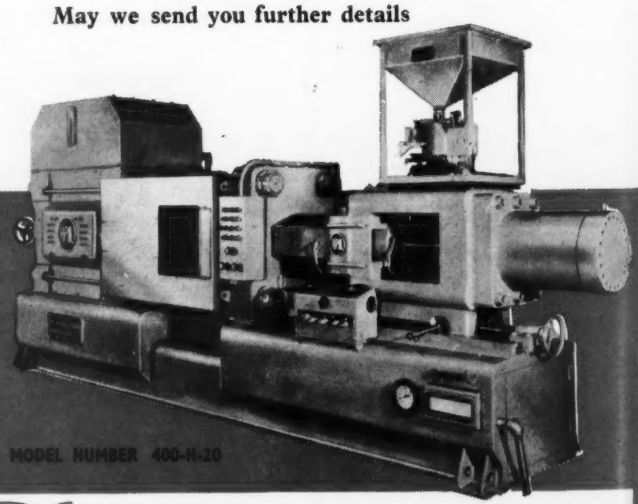
Model 400-P48A Capacity 48 ounces.
,, 1200-P200 ,, 200 ,,
,, 3000-P400A ,, 400 ,,

From 6 ounces to 400 ounces; with mould clamping pressures from 150 tons to 3,000 tons . . . that's the scope of the new H.P.M. range.

Each machine is new, designed with many outstanding features. High capacity plasticizing chambers, weigh feeders, greater 'shot' capacities, increased daylight and stroke, quiet pumps, and sub-plate mounted valves reducing piping to the absolute minimum, are some of the reasons why H.P.M.'s mould better, faster and at lower cost.

They are famous for dependability too; designed by America's pioneer manufacturers of injection machines, each unit has 77 years' hydraulic machinery building experience behind it.

May we send you further details



MODEL NUMBER 400-H-20

WICKMAN LIMITED

FACTORED MACHINE DIVISION, FLETCHAMSTEAD HIGHWAY, COVENTRY

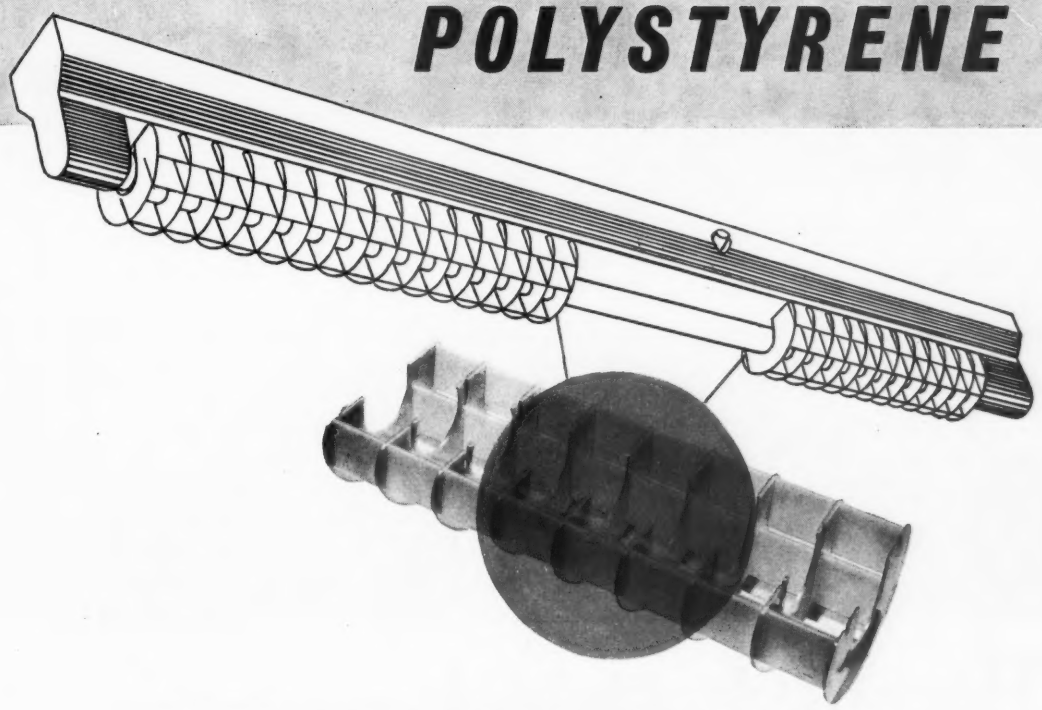
Telephone: Coventry 40351

402 F43

HIGH LIGHTING EFFICIENCY *through*

Erinoid

POLYSTYRENE



CLIPLUVE, the new patent clip-on lighting louvre*, is produced by Tube Laminations and Engineering Ltd. in Erinoid light-diffusing pearl polystyrene. This material diffuses light and at the same time achieves a maximum lighting efficiency. In the case of the CLIPLUVE fitting, used by the Ministry of Works, a general lighting efficiency of 90% is obtained. Vertically below the fitting, the efficiency is 100%.

Erinoid light-diffusing pearl polystyrene is available in KLP (general purpose), 2CL (high molecular weight), HS (heat resistant) and 2CL/HS grades. All grades of Erinoid polystyrene are available as moulding powder, sheets and extruded sections.

**Prov. Patent No. 7685/54. Registered Design No. 870221*

Erinoid Polystyrene is manufactured by

STYRENE PRODUCTS LIMITED

Full information, samples, prices, etc. on application to

ERINOID LIMITED · STROUD · GLOUCESTERSHIRE

Telephone: Stroud 810

LONDON OFFICE: 96 PICCADILLY · LONDON · W1 · TELEPHONE: GROSVENOR 7111

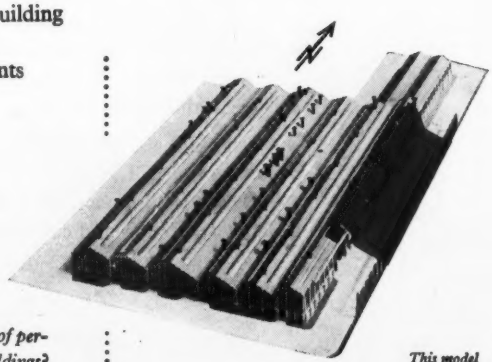
A GUARANTEE has been given by Beecham Buildings Ltd. to complete a new factory of 200,000 sq. ft. and considerable intricate ancillary work for an Industrial organisation in the Midlands — within a year.

This is the seventh advertisement telling the story.

The last span!

The structure of this building is now all but complete. Beecham Buildings, using their new ways of building have maintained the steady flow of reinforced concrete components from their factory to the site where trained erectors take over.

A further advertisement in September will complete the story of this contract and prove the value of our guarantee.



This model of the complete factory has pin-pointed progress in six preceding advertisements. Progress to date includes 150,000 cubic yards of excavation; perimeter roads, North extension, foundations complete, floors complete.

Beecham Buildings

May we advise you on the construction of permanent and competitive Industrial Buildings?

BEECHAM BUILDINGS LTD

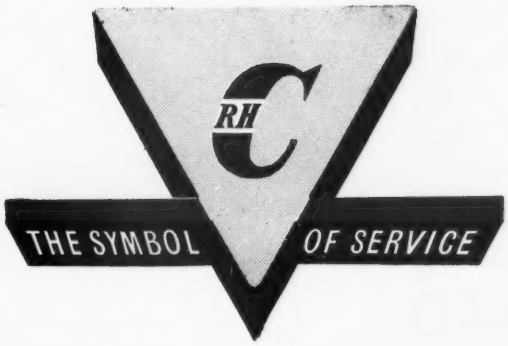
DEPT. K

SHIPSTON-ON-STOUR, WARWICKSHIRE

Telephone: Shipston-on-Stour 315, 316 & 3287

AP.211.53

R.H.C. PRODUCTS



A Most Comprehensive Range of Raw Materials for the Plastics Industry

P.V.A. RESINS, EMULSIONS AND SOLUTIONS	For surface coatings and adhesives.
METHACRYLIC MONOMERS, POLYMERS AND SOLUTIONS	For surface coatings and dental purposes.
VINYL CHLORIDE POLYMERS AND CO-POLYMERS	Resins. Calendering, injection and extrusion grades.
STYRENE MONOMER	For Polymerisation, laminating and sealing compounds, co-polymers and surface coatings.
STYRENE-BUTADIENE LATICES	For surface coatings.
ACETO BUTYRATE, TRI-ACETATE AND STYRENE FOILS	For electrical insulations.
POLYAMIDE FOILS	For industrial and domestic packaging.
THERMOCHROM CRAYONS AND POWDERS	Temperature indicators for machinery heating systems.
ADHESIVES	For plastics.
ORGANIC PEROXIDES & PER-ACIDS	Polymerisation Catalysts.

RHC POLYSTYRENE **KLP General Purpose** **HS Heat Resistant** **2CL High Molecular Weight** **2CL/HS High Molecular Weight, Heat Resistant** **CP.20 Toughened** **CP.20/HS. Toughened Heat Resistant**	For injection and compression moulding and extrusion.
CELLULOSE ACETATE MOULDING POWDER—VIRGIN & SECOND GRADE	For injection moulding and extrusion.
ACETO BUTYRATE MOULDING POWDERS	Injection and extrusion.
POLYAMIDE MOULDING COMPOUNDS	For injection and extrusion.
POLYURETHANE MOULDING COMPOUNDS	For extrusion and injection of articles having high mechanical qualities.
POLYTHENE AND POLYSTYRENE RE-PROCESSED	In a range of colours for injection and extrusion.
POLYSTYRENE HIGH IMPACT SHEETING, POLISHED AND JEWEL HIGH GLOSS	For vacuum forming.
CELLULOSE ACETATE & TRI-ACETATE FLAKE	For moulding powders, lacquers, strippers, film, foils and sheeting.

TRADE GRINDING AND RECLAMATION SERVICE. Complete modern equipment, designed to meet the requirements of the Plastics Industry.

R. H. COLE & COMPANY LTD

2 CAXTON STREET · WESTMINSTER · LONDON · SW1

Telephone: ABBey 3061 (10 lines) Telegrams: GERATOLE, PHONE, LONDON

CP.20

TOUGHENED STYRENE CO-POLYMER

for

MAXIMUM IMPACT STRENGTH

and

IMPROVED DIMENSIONAL STABILITY

with

HIGH SURFACE LUSTRE

and

ATTRACTIVE COLOUR RANGE

Illustrated is an instrument case in R.H.C. Polystyrene CP.20. Moulded by **Lustroid Ltd.**, Raynes Park, S.W.19, for **Keeler Optical Products Ltd.**, Windsor.

RH C
THE SYMBOL OF SERVICE

R. H. COLE & COMPANY LTD

2 CAXTON STREET · WESTMINSTER · LONDON · SWI

Telephone: ABBey 3061 (10 lines) Telegrams: GERATOLE, PHONE, LONDON

Latest Products of the R.H. Cole Group

RHC RECLAMATIONS

Are now in full production of reclaimed

POLYTHENE
POLYSTYRENE
CELLULOSE ACETATE

In addition to their established range of virgin materials R. H. Cole now offer ex stock reclaimed plastics of especially high quality

LATEST EQUIPMENT AND CONSTANT LABORATORY CONTROL ENSURE BULK OUTPUT TO UNIFORM STANDARDS

R. H. COLE & COMPANY LTD
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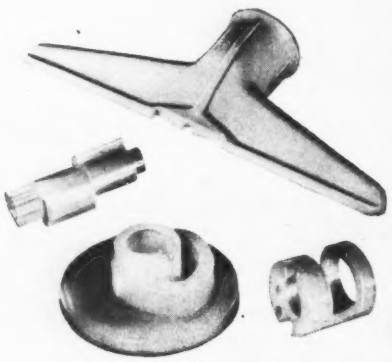
DURETHAN BK



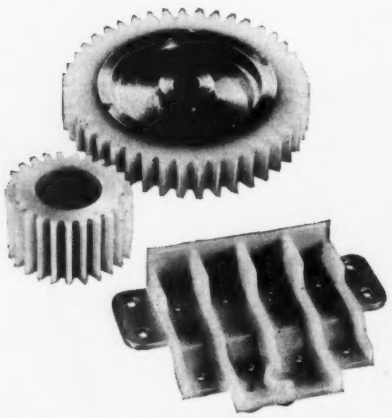
DURETHAN BK is a high quality Polyamide based on Caprolactam, the raw material for Perlon. It has the following valuable properties:

- Economic in use - small or large runs may be manufactured by injection moulding, pressing or sintering, or with metal working tools
- Low specific gravity
- High strength
- High elongation
- Excellent impact strength
- Good sound insulation
- High temperature resistance
- Good temperature stability
- Low co-efficient of friction
- Good mechanical properties

This combination of properties makes DURETHAN BK particularly suitable for a wide range of technical applications. The undermentioned are but a few of the large number of technical items satisfactorily manufactured from DURETHAN BK:

Rollers
Gear wheels and parts
Shaft pinions
Cams
Handles
Nuts for geared spindles
Slides and slide shoes
Small machine housings
Closures

DURETHAN BK is used in general machine building, measuring and scientific instrument manufacture, in domestic appliances, vehicles, sports goods, toys, and in a host of other articles in daily use.



DURETHAN BK is a Reg. Trade Mark of Farbenfabriken Bayer Aktiengesellschaft Leverkusen

BAYER

FARBENFABRIKEN BAYER
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MITIA
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BROWN TOOLS
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FIRTH
SHEFFIELD
SERIAL No 419
SAWS for PLASTICS
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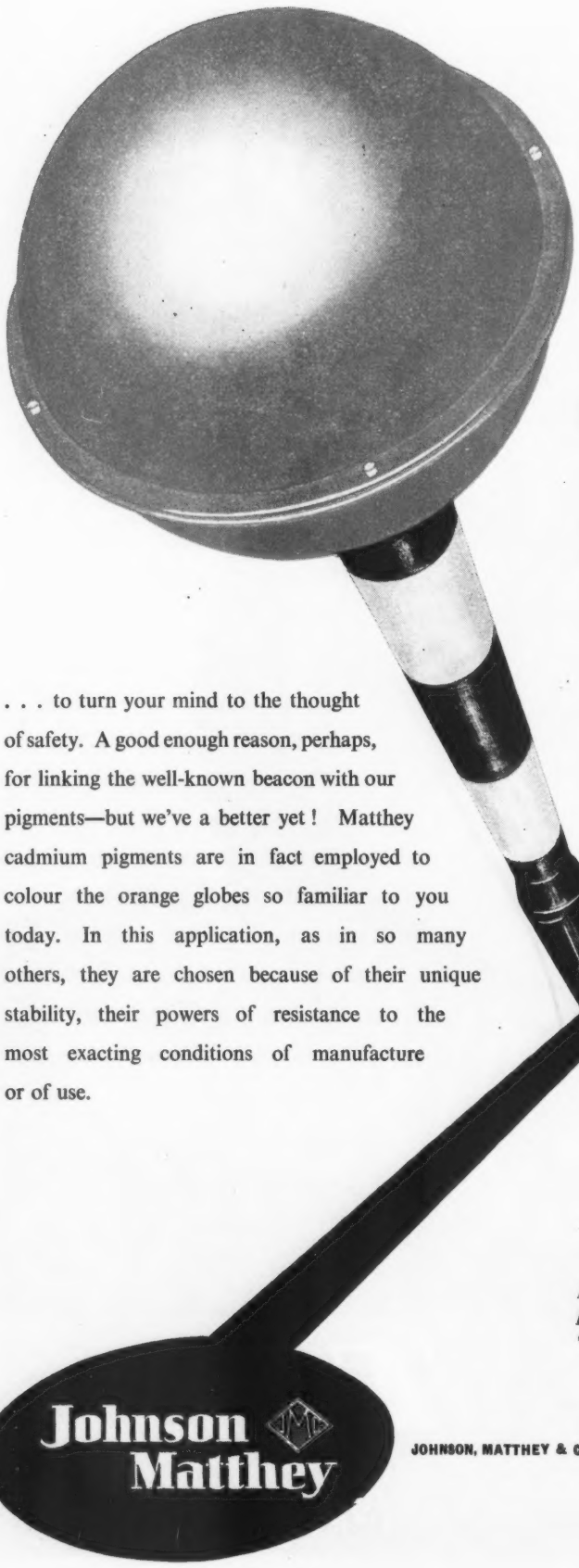
FIRTH BROWN TOOLS LTD.
SPEEDICUT WORKS, CARLISLE STREET EAST,
SHEFFIELD ENGLAND



to catch

your eye . . .

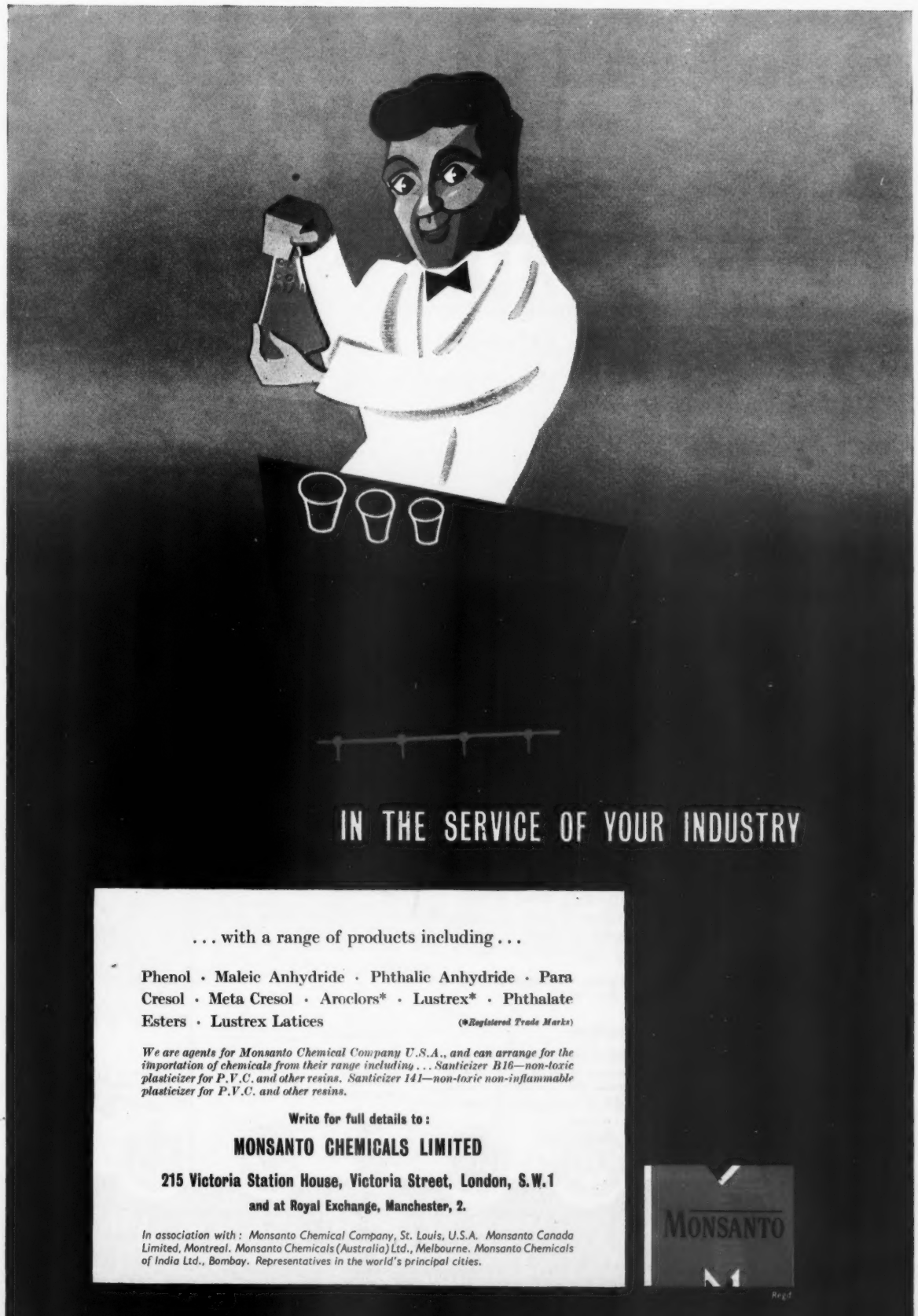
. . . to turn your mind to the thought of safety. A good enough reason, perhaps, for linking the well-known beacon with our pigments—but we've a better yet! Matthey cadmium pigments are in fact employed to colour the orange globes so familiar to you today. In this application, as in so many others, they are chosen because of their unique stability, their powers of resistance to the most exacting conditions of manufacture or of use.

Matthey
CADMIUM PIGMENTS

Literature describing Matthey Cadmium pigments is available on request and enquiries on any colouring problem are welcomed.

Johnson Matthey

JOHNSON, MATTHEY & CO. LIMITED, HATTON GARDEN, LONDON, E.C.1. Phone: HOLborn 6989



IN THE SERVICE OF YOUR INDUSTRY

. . . with a range of products including . . .

Phenol · Maleic Anhydride · Phthalic Anhydride · Para Cresol · Meta Cresol · Aroclors* · Lustrex* · Phthalate Esters · Lustrex Latices (*Registered Trade Marks)

We are agents for Monsanto Chemical Company U.S.A., and can arrange for the importation of chemicals from their range including . . . Santicizer B16—non-toxic plasticizer for P.V.C. and other resins. Santicizer 141—non-toxic non-inflammable plasticizer for P.V.C. and other resins.

Write for full details to:

MONSANTO CHEMICALS LIMITED

215 Victoria Station House, Victoria Street, London, S.W.1

and at Royal Exchange, Manchester, 2.

In association with: Monsanto Chemical Company, St. Louis, U.S.A. Monsanto Canada Limited, Montreal. Monsanto Chemicals (Australia) Ltd., Melbourne. Monsanto Chemicals of India Ltd., Bombay. Representatives in the world's principal cities.

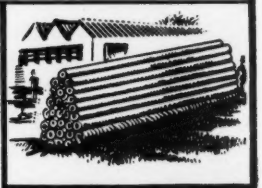
MONSANTO

and this is why

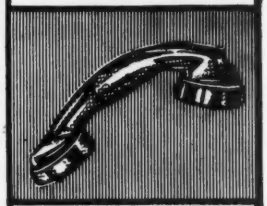
Specific Gravity	.. .. ..	**1.24**
Tensile Strength, p.s.i. B.S. 771/48	..	**9-10,000**
Impact Strength Izod. B.S. 488/48	**Pressed Sheet 14-16**	**ft. lbs. ½" sq. notched bar**
	Extrusion - 9-11	
	Moulded - 7-9	
Elongation at Break	.. ..	**15%-20%**
Effect of Heat	.. .. ..	**Rigidity unchanged up to 90°-100°C**
Effect of Petrol, Paraffin and other Hydrocarbon Oils	.. .. ..	**Negligible**

FrōmoPLAS H.T. is a completely new thermoplastic copolymer resin. Most of its physical characteristics far exceed those of other thermoplastic materials. For strength, toughness, and durability, coupled with lightness it is unrivalled. FrōmoPLAS H.T. is the new material for engineers.

Pipes made from FrōmoPLAS H.T. are lighter and stronger than those made from the usual thermoplastic materials. Their anti-corrosion properties make them ideal for carrying water, petrol, paraffin, and many other liquids.



Mouldings in FrōmoPLAS H.T. have withstood tests far in excess of the generally accepted standards. In fact FrōmoPLAS H.T. approaches commercial aluminium in tensile, sheer, and impact strength, and therefore has a very wide range of applications in which other types of rigid plastics fail.



In its sheet form the tough but light FrōmoPLAS H.T. is being used in the Vickers 'Viscount'; an excellent recommendation for this outstanding material. FrōmoPLAS H.T in sheet form is also being used for numerous special purposes by the Admiralty and Ministry of Supply.

WALLINGTON, WESTON & CO. LTD.

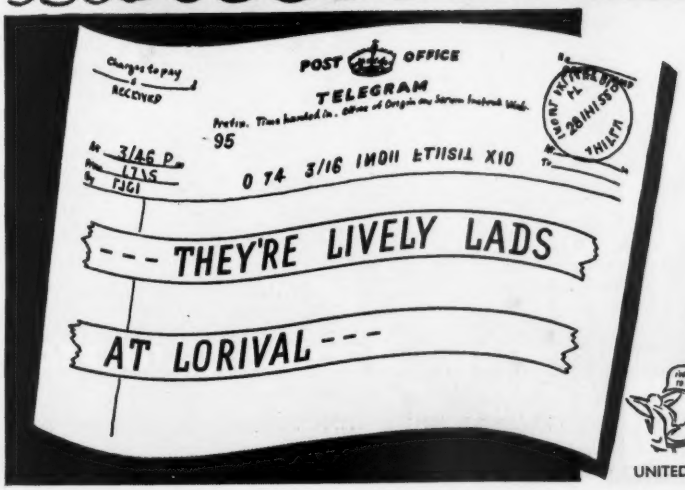
(Incorporating Frome Plastics Ltd.)

Telephone: Frome 2206/7/8 FROME SOMERSET, ENGLAND A.I.D. & A.R.B. approved

Established 1896

London Office: Premier House, 48 Dover Street, W.1 Telephone:—Grosvenor 6512

L 60



Do you want your plastics post-haste? See the lively lads at Lorival. They've got all it takes when it comes to plastics. For low costs and express delivery, address your needs to 'Lorival'.

LORIVAL PLASTICS

UNITED EBONITE AND LORIVAL LTD., LITTLE LEVER, NR. BOLTON, LANCS.

'Celastoid'

TRADE MARK

SLICED ACETATE

Sheet

Is used by more and more manufacturers for economical mass-production

BRITISH CELANESE LIMITED

Discriminating buyers prefer

The U·M·P PACKAGING SERVICE

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For Tubes and Plastics

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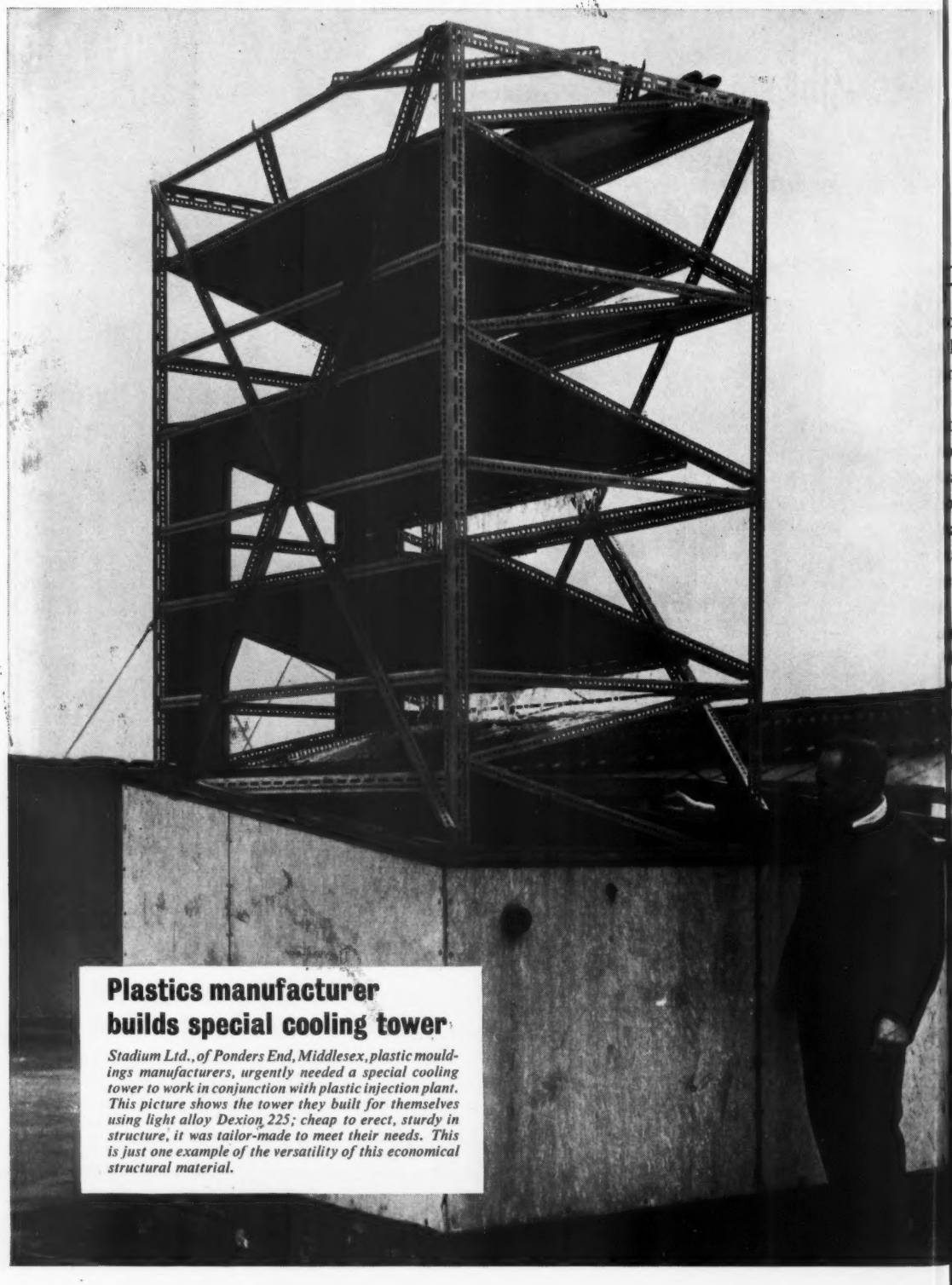


Plastics manufacturer builds special cooling tower

Stadium Ltd., of Ponders End, Middlesex, plastic mouldings manufacturers, urgently needed a special cooling tower to work in conjunction with plastic injection plant. This picture shows the tower they built for themselves using light alloy Dexion 225; cheap to erect, sturdy in structure, it was tailor-made to meet their needs. This is just one example of the versatility of this economical structural material.

EQUIPMENT—

quickly, cheaply, strongly, *exactly as you want it*—with versatile DEXION slotted angle

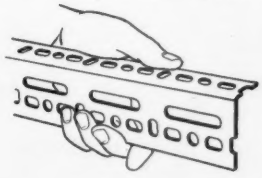
FOR almost any kind of works or storage equipment you may need — storage racking, machine stands, bolleys, work-benches, maintenance platforms, and hundred other items — you'll find Dexion Slotted ngle the sturdiest, cheapest, most versatile material. Dexion is far easier and quicker to work with than ood or angle iron. It merely needs cutting and olting together — no precise measurements or detailed awings, no drilling or welding, no skilled carpentry, painting. *The work has been put into it already*, so at unskilled labour can handle any job. You get actly the structures you need, without delay, and nerally at a big saving.

Dexion is scientifically designed so that every slot d hole has a function, and the remaining metal is t where it gives greatest strength. It *ntinues* to save you money, because any exion structure can be swiftly altered or smantled and the Dexion used again. here is no waste, no scrap.

Dexion is the Slotted Angle that started an industry. Now, over 75 million feet are being used by more than 45,000 firms all over the world. *And 80 per cent of Dexion sales are repeat orders.*

GET THE FACTS

Dexion 225 is sold in packets of ten 10-ft. lengths, complete with bolts. Steel Dexion *(price from 1/3½ to 1/5 per foot)* is rust-protected, stove enamelled. Where a light but strong, non-magnetic, non-corroding material is required, use Alloy Dexion (full technical details and prices on request). Dexion Service offers advice or design assistance on any problem, and construction teams are available. Send today for sample piece of Dexion and booklet AB. 131 illustrating uses in many industries. Dexion Ltd., 65 Maygrove Road, London, N.W.6. (Telephone: MAIda Vale 6031-9.)



DEXION
SLOTTED ANGLE

ICI solve a problem

Empty drums represent only one of the storage problems that Dexion Slotted Angle helps to solve in industry. This sturdy, inexpensive rack was constructed by ICI Paints Division at their Glasgow works.

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Moulders to the Admiralty, Air Ministry, Ministry of Supply, G.P.O., Electricity Boards, and world famous undertakings in all branches of British Industry.

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EXCELSIOR WORKS, ROLLINS STREET, LONDON, S.E.15.

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The manufacturer who
looked all round the possibilities
and decided to use

Epikote Resins

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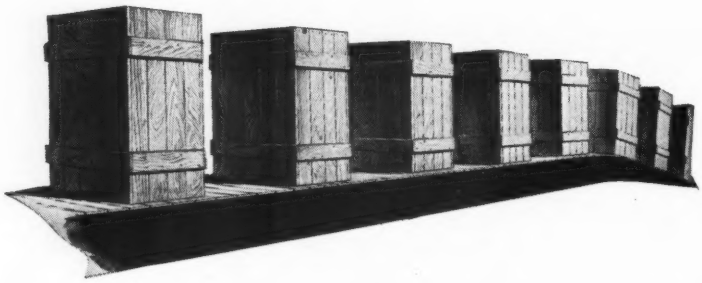
Ep4

"EPIKOTE" is a Registered Trade Mark

we were all over the place



until we called in KING *(and got things moving)*

Inefficient, outdated handling methods can play havoc with production figures. They eat up the minutes, the man-hours and the money. More and more production men are becoming aware of the need for modern mechanical handling methods. If you're not happy with your present handling methods, **call in KING and get things moving.** *Our representative will call on you—anywhere in the world.*

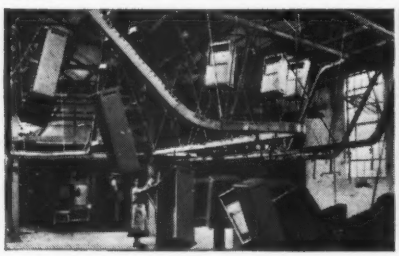
***STREAMLINE* YOUR PRODUCTION WITH**

KING REGISTERED TRADE MARK

CONVEYORS • CRANES • PULLEY BLOCKS

Covered by British and Foreign Patents

A KING P.C.P. LIGHT-TYPE CONVEYOR *carrying heater bodies at Valor Company's Works. For loads up to 200 lbs.*



A KING OVERHEAD TRAVELLING CRANE—*cab controlled—working with precision in a foundry.*

A KING POWER-PULLED HEAVY DUTY CONVEYOR *shown working at the Robbialac factory. For loads up to 1 ton.*

WRITE FOR ILLUSTRATED LEAFLETS TO GEO. W. KING LTD., 67 Argyle Works, Stevenage, Herts. Telephone: Stevenage 440

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STYRON Polystyrene WILL BE MANUFACTURED BY DISTRENE LTD AND MARKETED BY BRP

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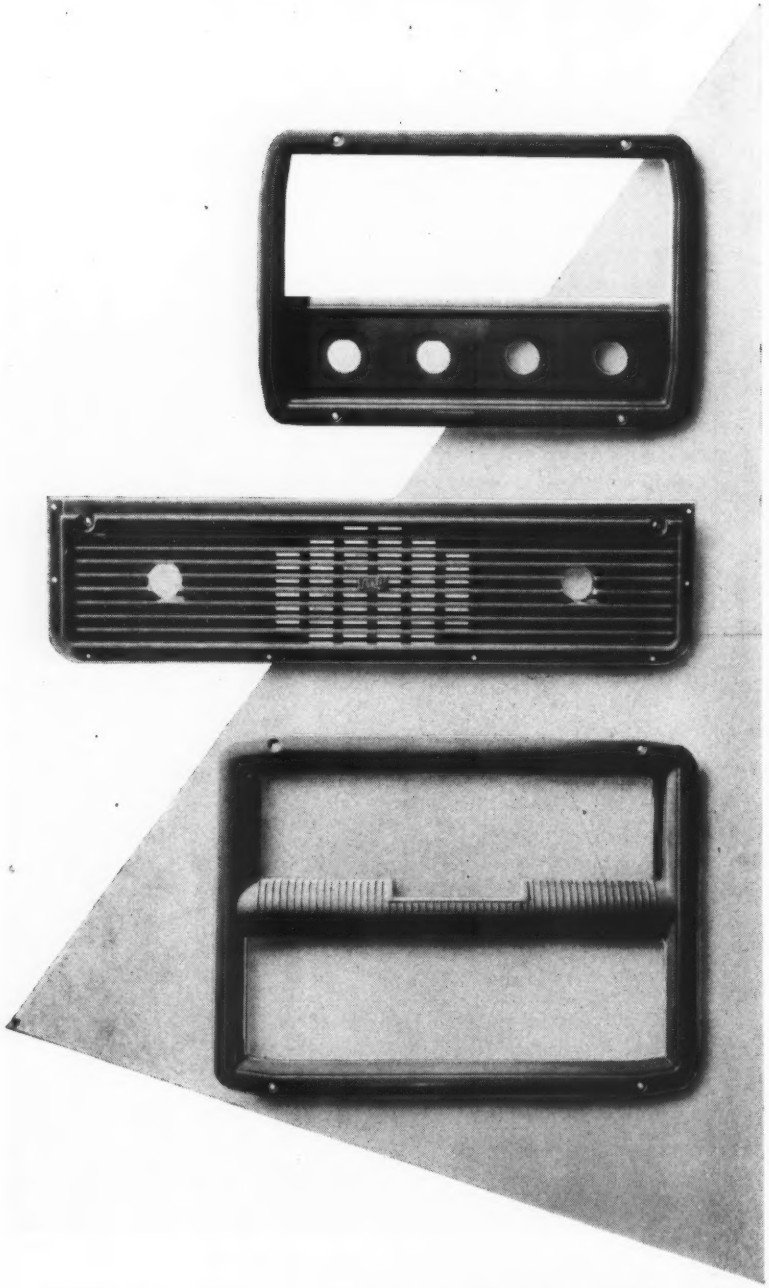
Hard Chrome Depositors to the Plastics Industry

W.W.B. precision mouldings



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- ★ **Excellent resistance to chemical attack.**
- ★ **Hygienic and non-corrosive.**

CHEMIDUS 2000 is a sound industrial material available in the form of rigid Tubes, Rods and Welding Wire.

Note *All materials used in compounding CHEMIDUS 2000 are normally harmless; it should therefore be of special interest for applications where the question of toxicity arises.*

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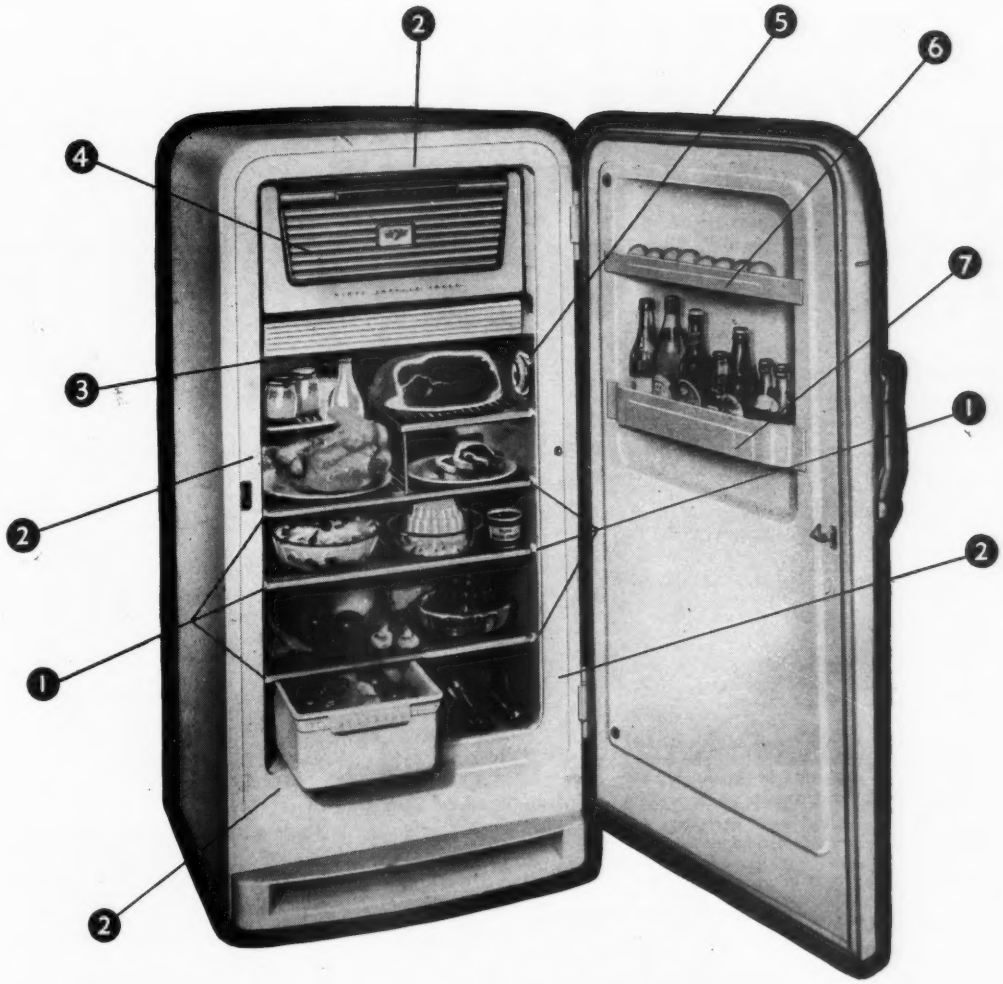

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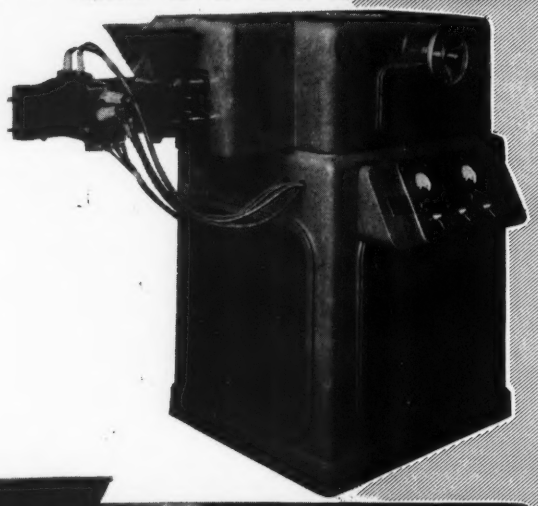
have pleasure in offering

PASQUETTI EXTRUDERS

manufactured at Varese, Italy, for producing moulding powder granules, rods, tubes and various shapes and sections in plastic materials.



Illustrated on the right is the patented twin screw Pasquetti Extruder.

Nominal capacity: 8-40 lbs. per hour (depending on material and type of extrusion).

Motor: 1.6 h.p. Fitted with protected starter and overload release.

Electrical heating: By Variac control.

Screws: Two $1\frac{7}{8}$" diameter. Hardened nickel-chrome steel screws, each in two sections having four and two starts respectively.

Illustrated below is a much larger model with a capacity of 44-133 lbs. per hour (depending on material and extrusion) and with two 3" diameter screws.

Patented bi-helicoidal gear extruders of larger capacity are also available.

★ T. H. & J. Daniels announce that they are also importing various types of Take-Off equipment.

You are cordially invited to write for further details and illustrated literature.

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Self-Lubricating and Electrical Conducting

Filler	Woodflour and Graphite
Particle size (inches)	1/10
Specific Gravity	1·47
Bulk Factor	2·4—2·6
Powder Density	0·55—0.60
Time of Cure of Test Cup (secs.) ...	45—55
Recommended flow range	3—10
Shrinkage (thou./in.)	5·5—6·5
Flowability (cm.)	9
Brinell Hardness	30—35
Impact Strength (ft./lb.)	0·13—0·18
Tensile Strength (lb./sq. in.)	6,500—7,500
Elastic Modulus in tension (lb./sq. in.) (at 0·1% strain)	$1{\cdot}4 \times 10^6$
Water Absorption (mg.) (7 days) ...	50—100
Plastic Yield Grading (°C.)	140
Dimensional Stability after heating (thou. per in. of moulding)	2
Volume Resistivity (as moulded) (log$_{10}$ ohm cm.)	1·0—1·2

Volume resistivity figures shown mean that the resistance between top and bottom electrodes in B.S.771 apparatus is of the order of 0·2—0·3 ohms.

This material has been developed for use as bearings and for application where an electrical conducting path is required.

A very arid fellow was blacksmith Ephraim Stampenclang—especially when working with his back to the forge. It was not surprising, therefore, to find him—in that inordinately hot August of 1862—resting a foot on the anvil and lubricating himself from a quart tankard of ale. While thus preparing for the day ahead, there was a loud explosion and a blinding flash as his grounded foot contacted a live wire that trailed from the rafters. Recovering from the shock,★ Ephraim picked up a horse-shoe blank and introduced it into the arc that played between his toes and the anvil. Seconds later, it was heated to incandescence and hammered into shape.

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★ *Critics remind us that electricity was not in general use in* 1862 *. . . this anecdote proves otherwise.*

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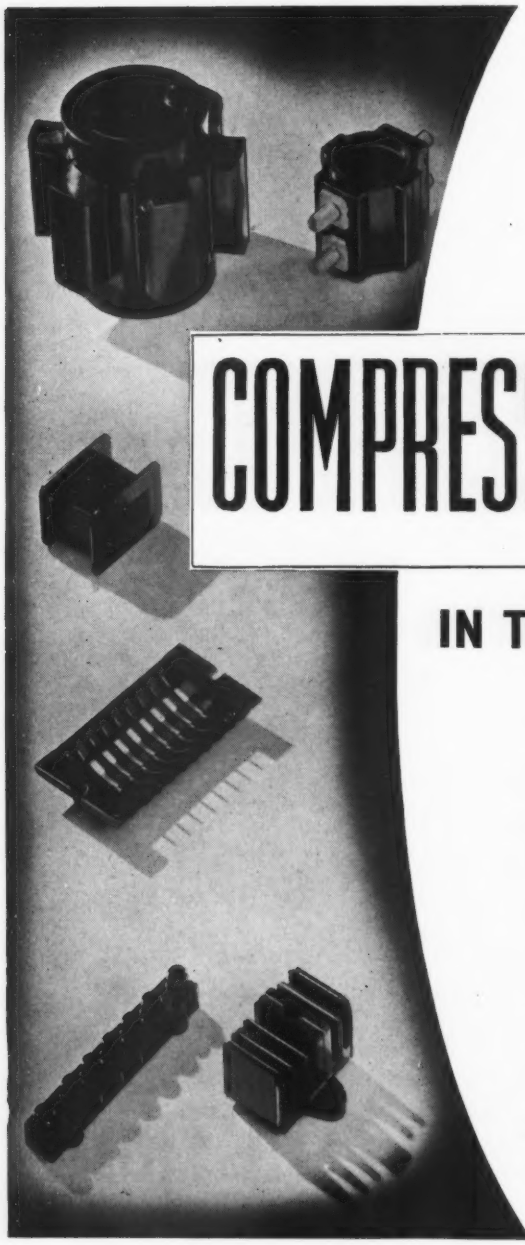

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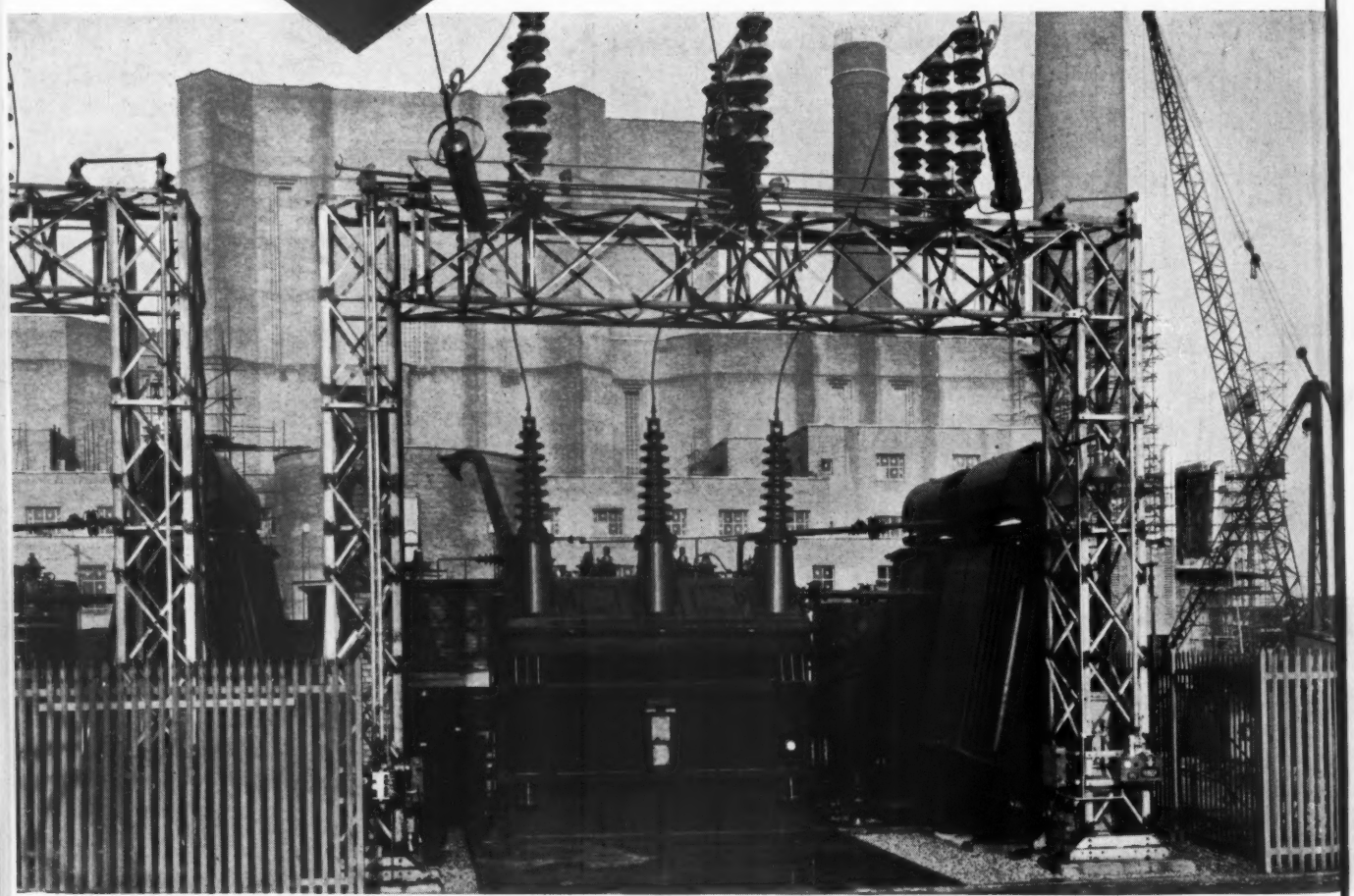

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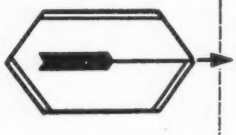

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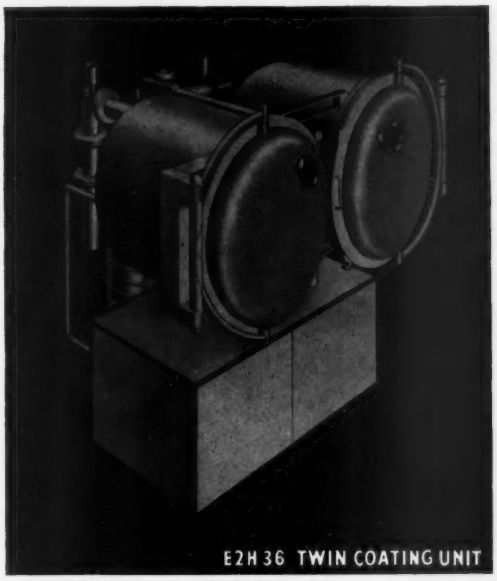
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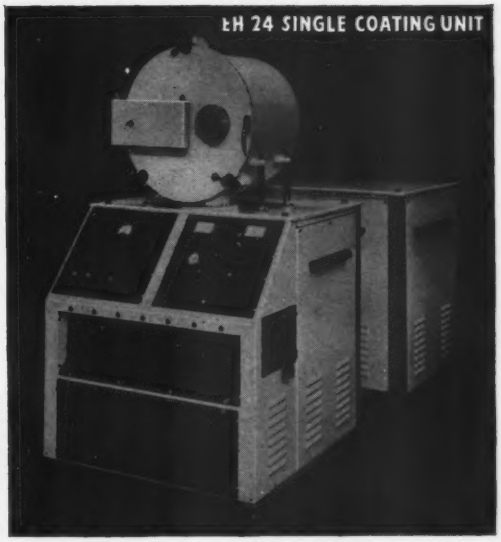
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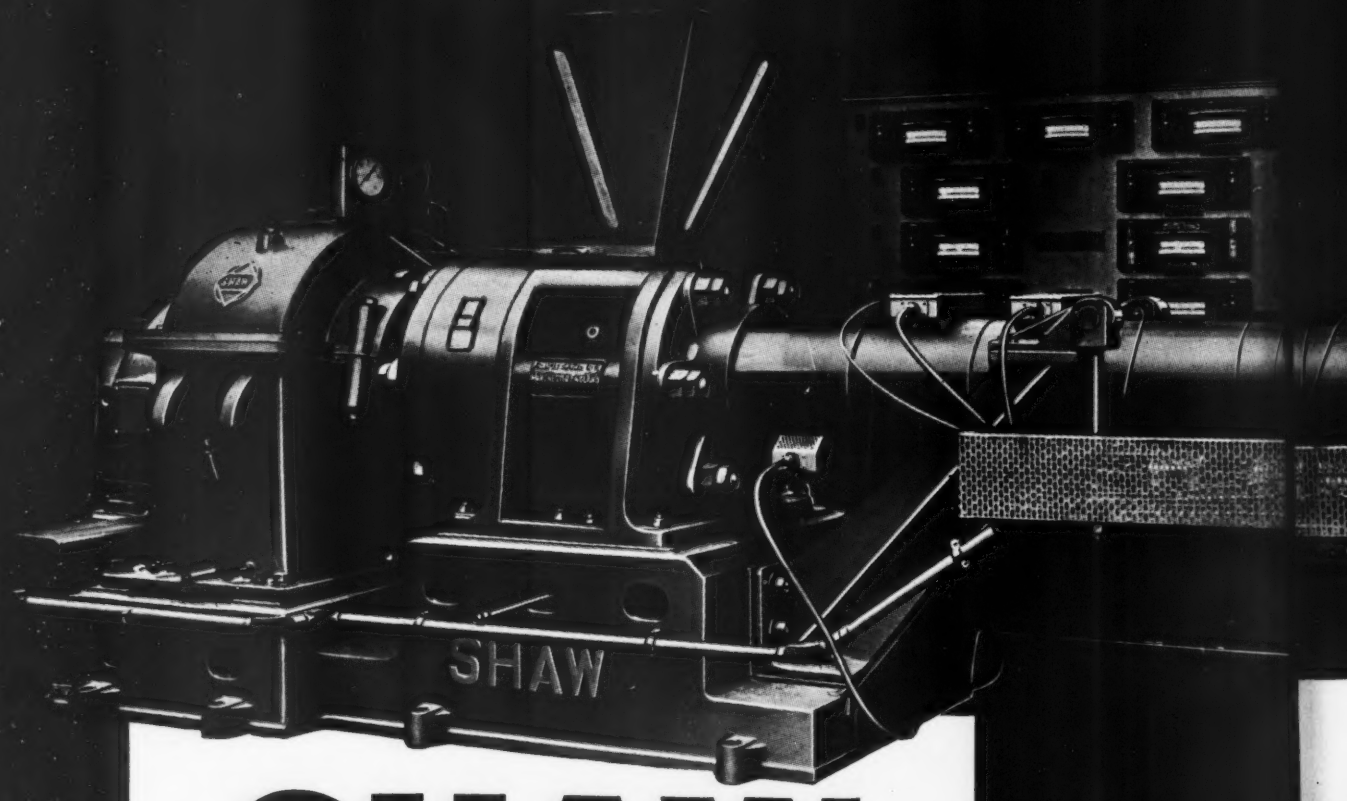

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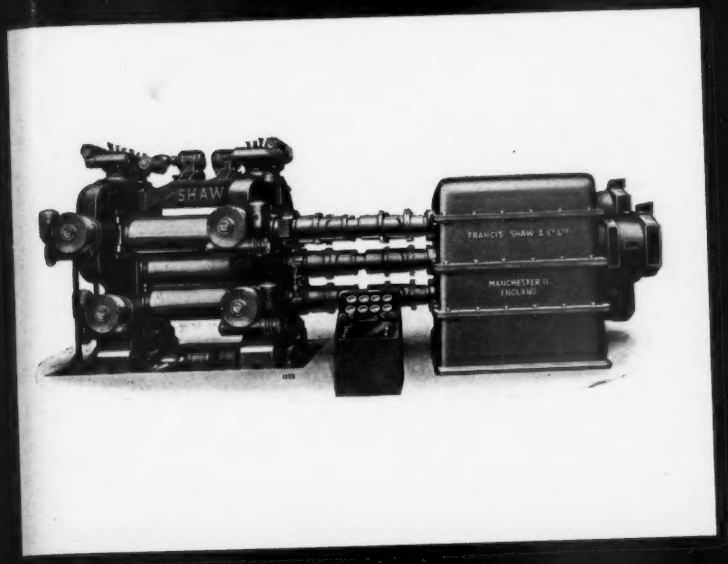
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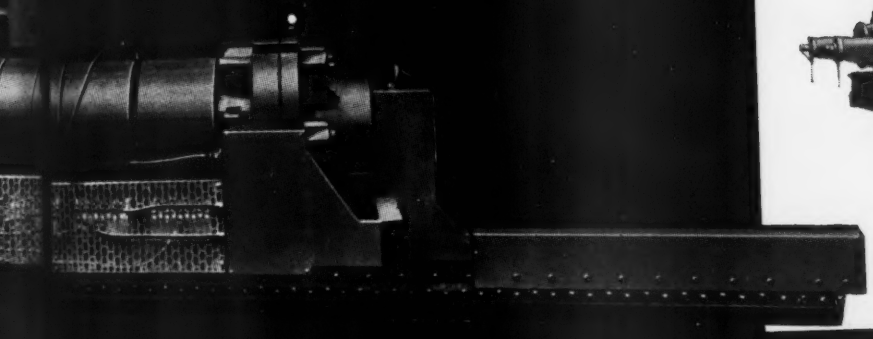
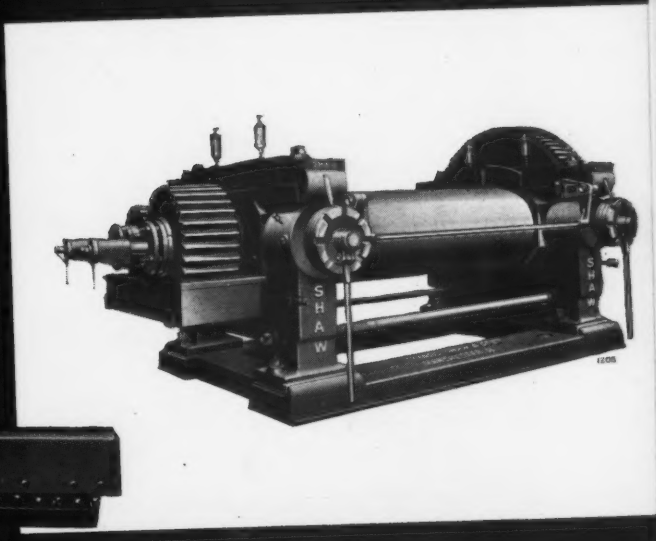
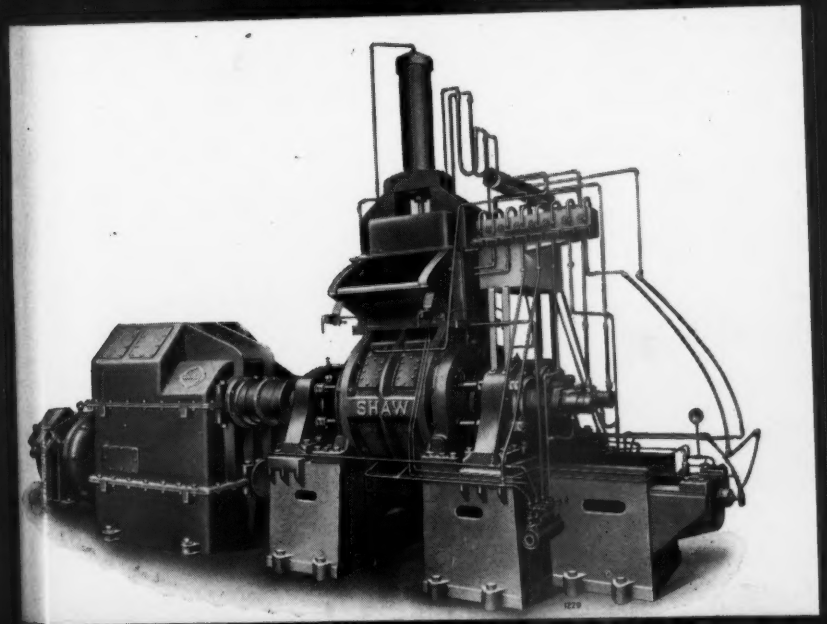
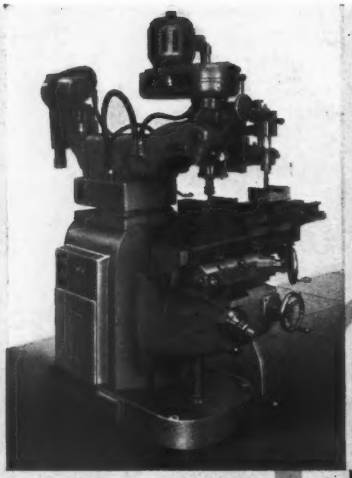


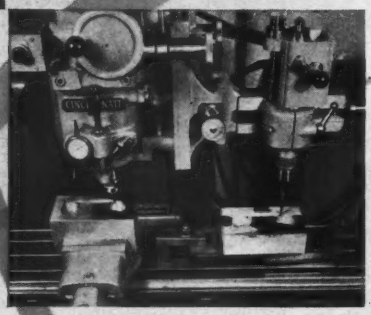

SHAW


SHAW

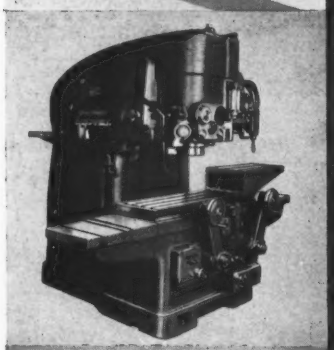


THE CINCINNATI 8"×18" TOOL AND DIE MILLING MACHINE has all the features necessary for rapid, accurate and economical production of small moulds and dies from almost any type of master. The illustration shows a left-hand die being made from a right-hand master.

Milling a die for a toy telephone receiver, using a plastic master. The 8" x 18" Tool and Die Miller is described in catalogue M-1620-E.

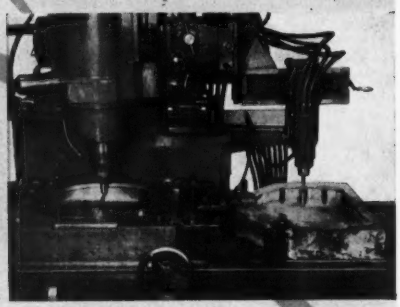


CINCINNATI MACHINE TOOLS for the PLASTICS INDUSTRY



CINCINNATI 16" VERTICAL HYDROTEL for machining medium to large sized moulds. Catalogue M-1497-E.

May we tell you more about these Cincinnati Machine Tools? The catalogues contain complete information on their features and the important advantages they offer to the plastics industry.



Milling a large die from a plaster master, on a **CINCINNATI 25" VERTICAL HYDROTEL.** Catalogue M-1773.

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Birmingham 24.

Sales Representatives for Great Britain and Northern Ireland:
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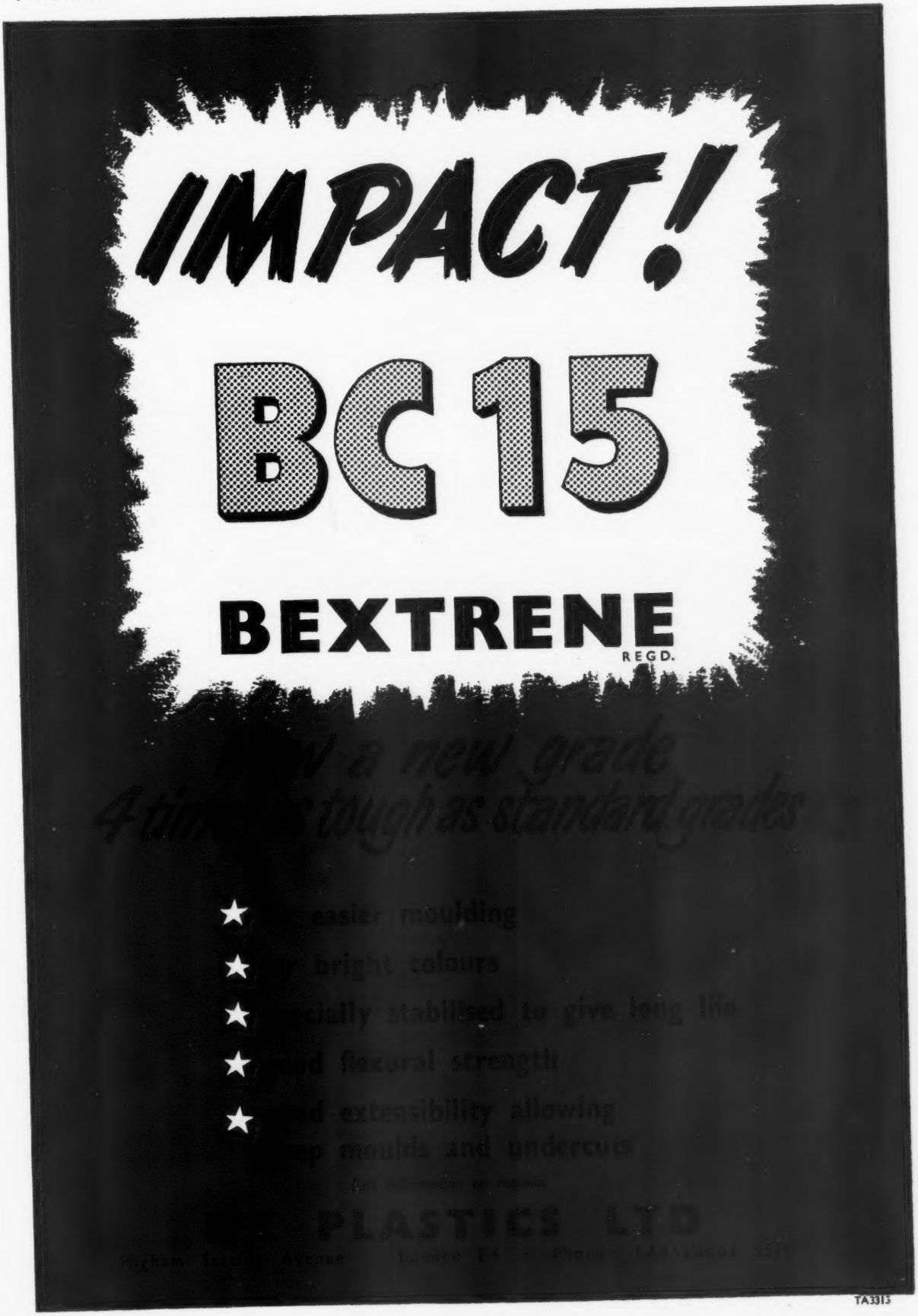
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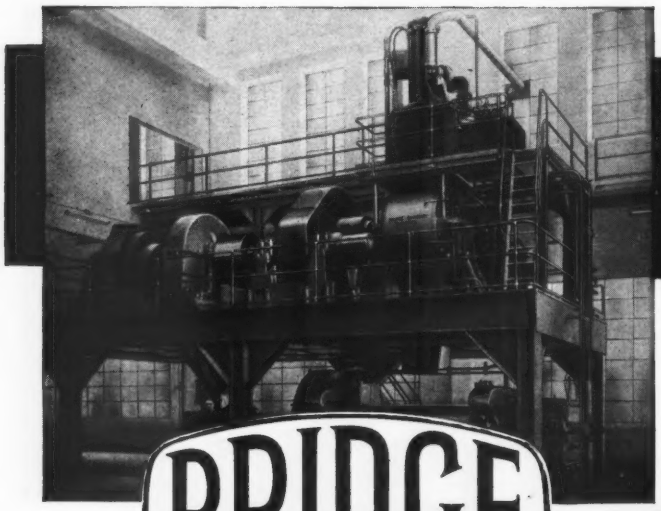

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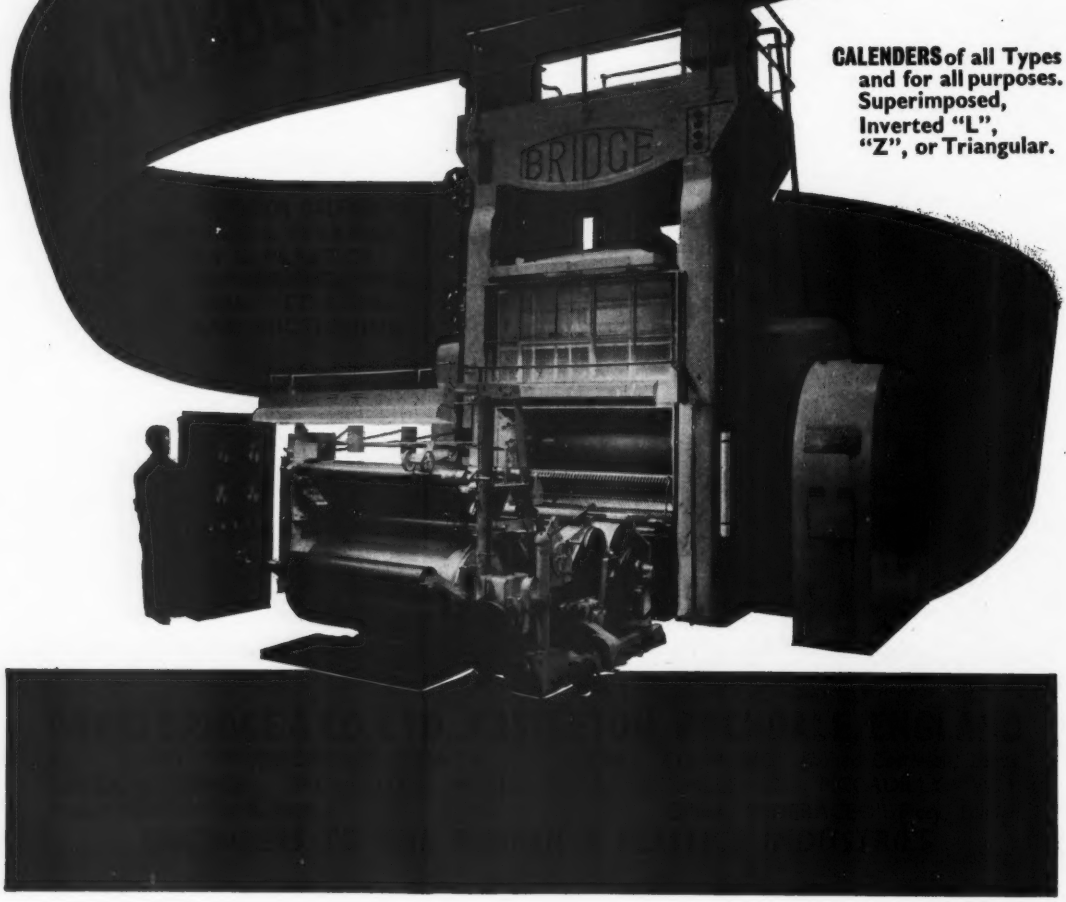

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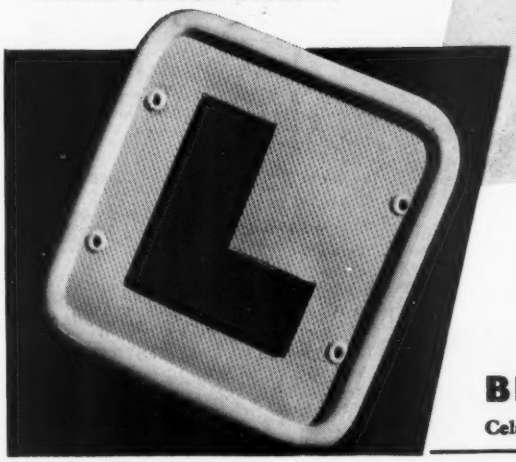

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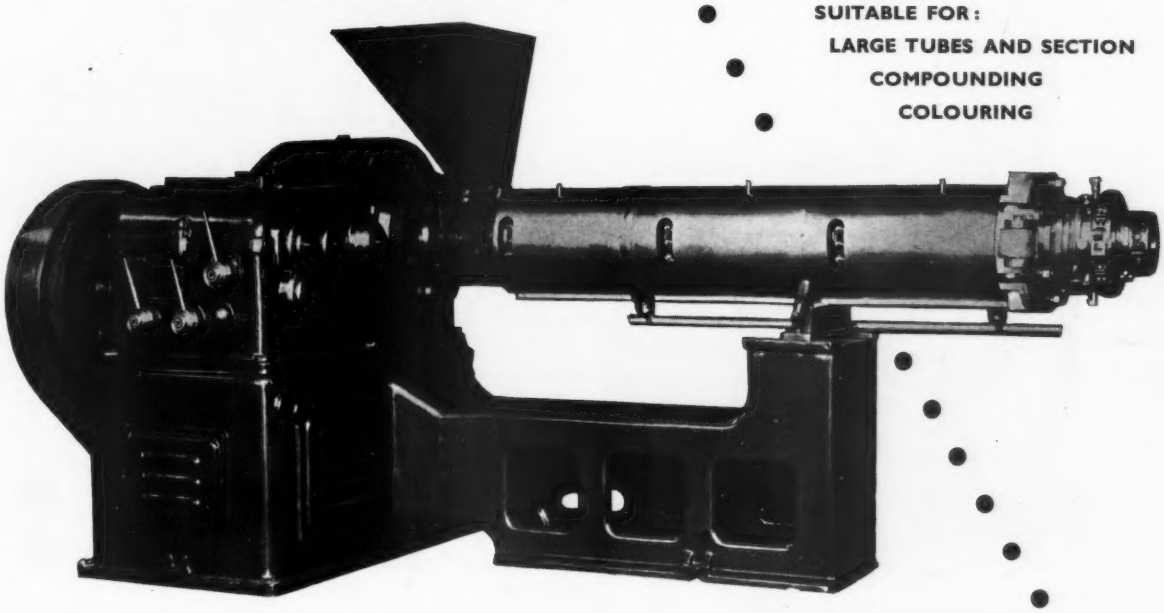

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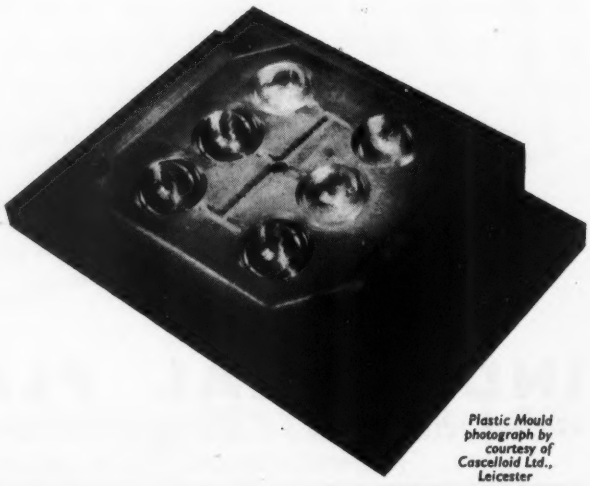
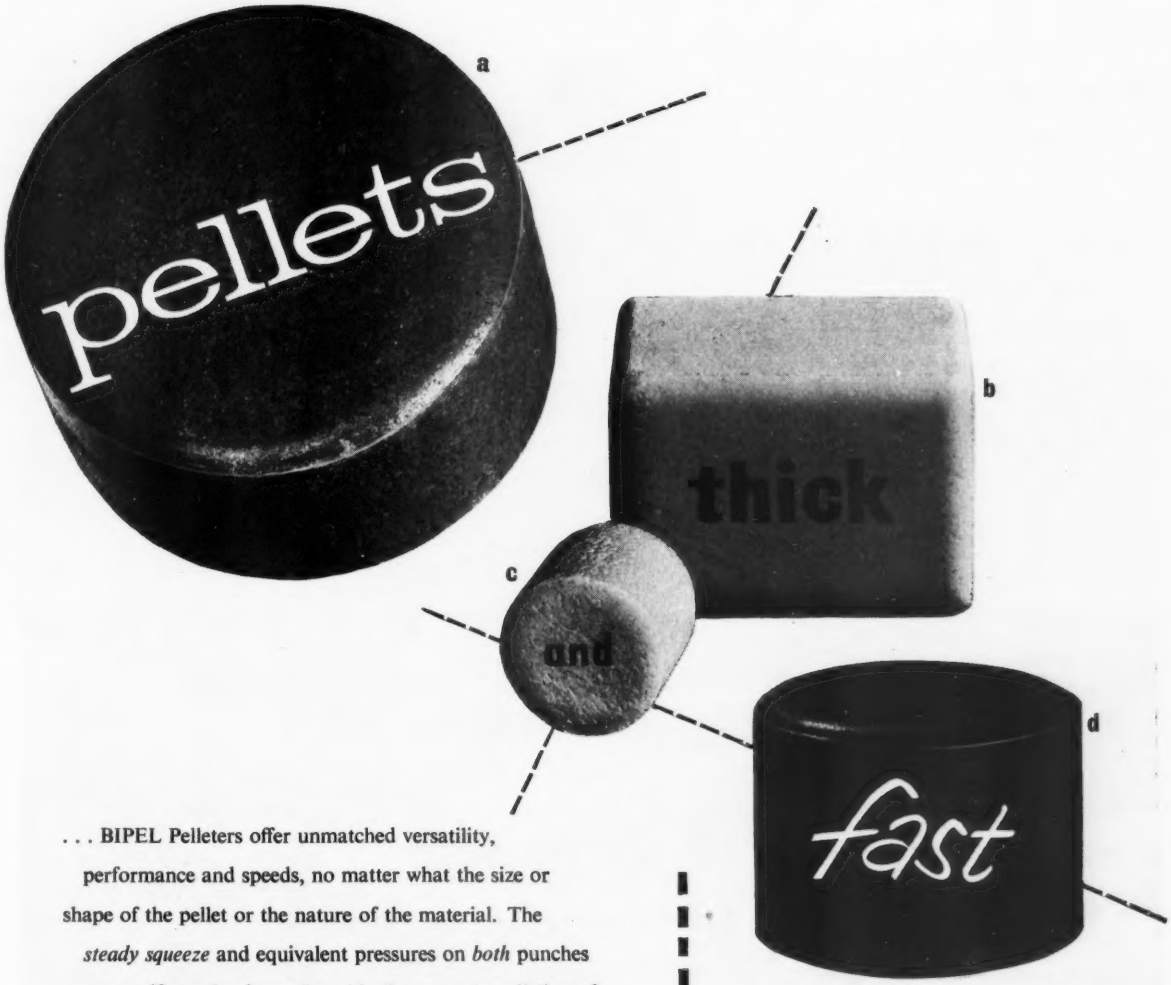


Plastic Mould photograph by courtesy of Cascelloid Ltd., Leicester



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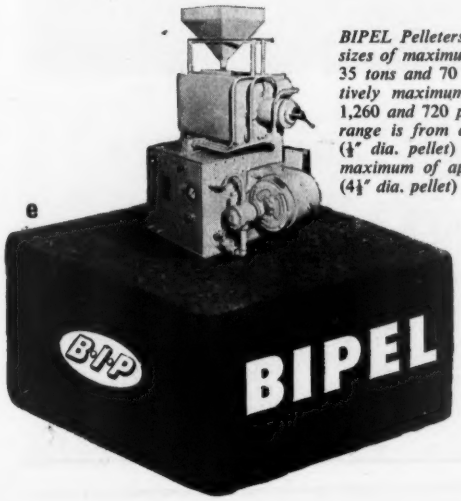

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c 1″ dia. twin-made ½ oz. Urea pellet. 58 per minute on 12-ton machine.
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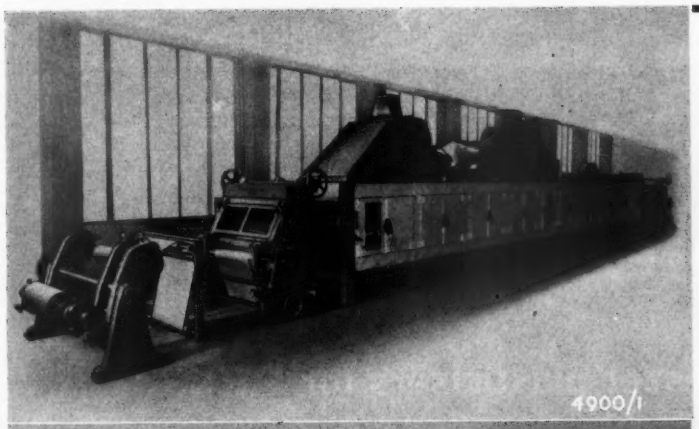

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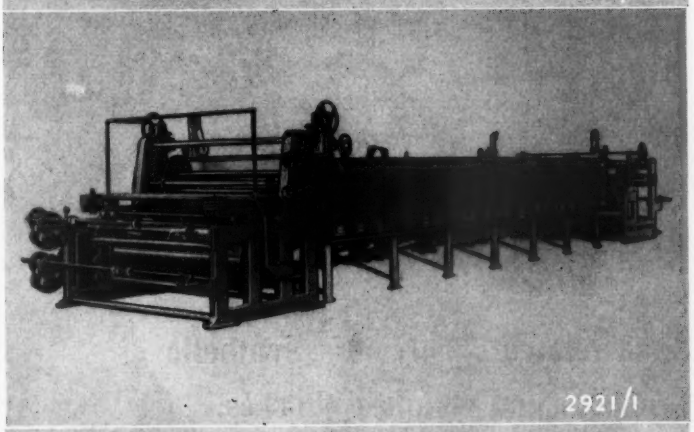
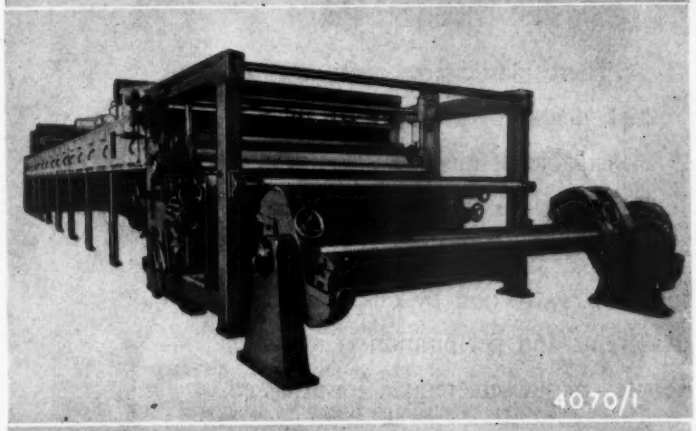


Special Coating Machine for coating paper, cloth, etc., with plastics. (PVC etc.)



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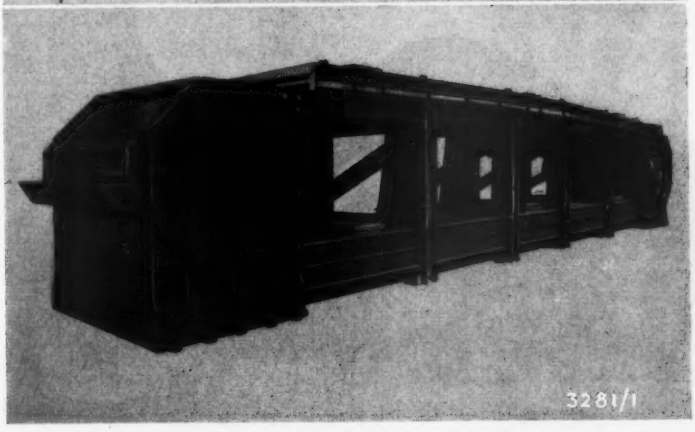

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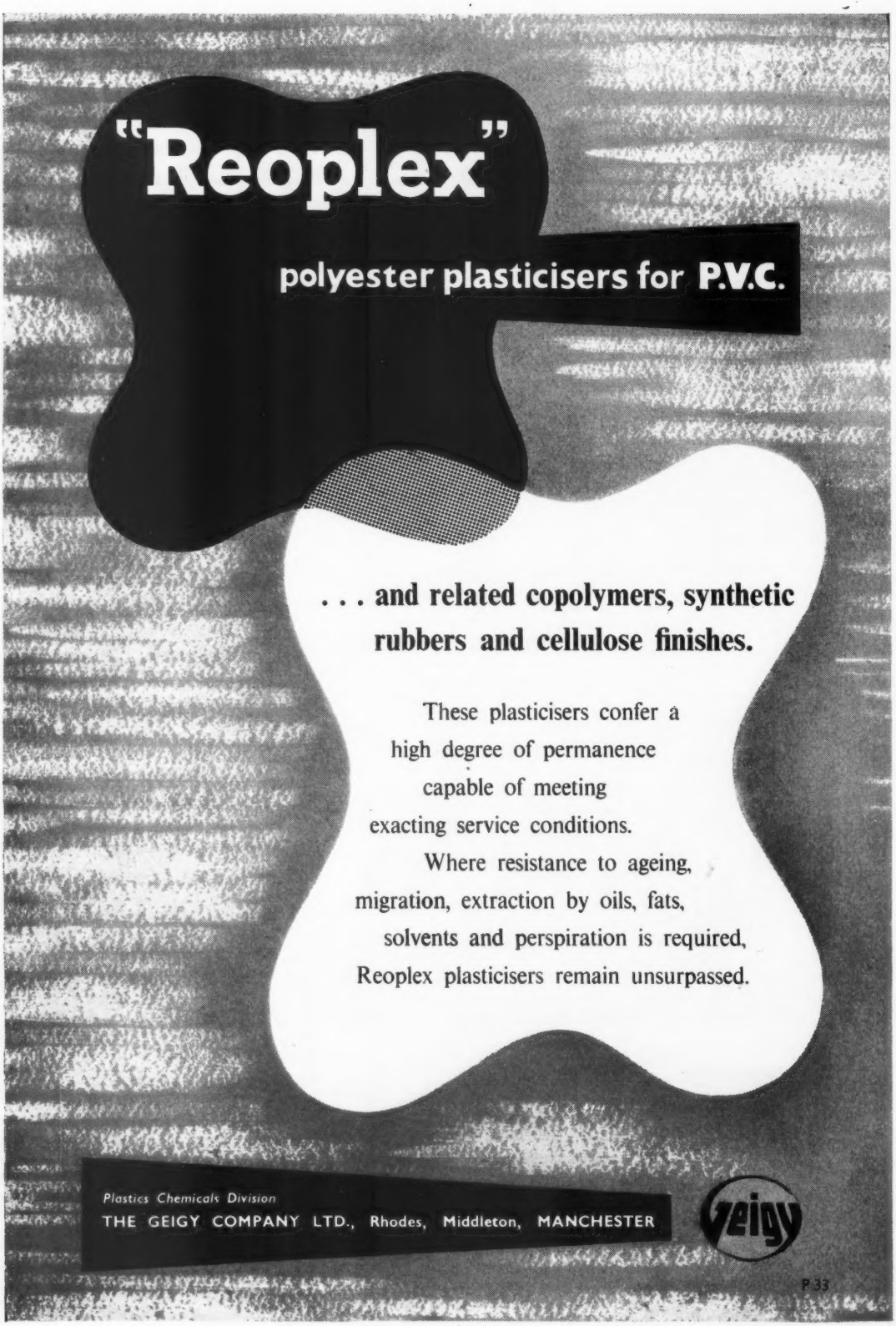
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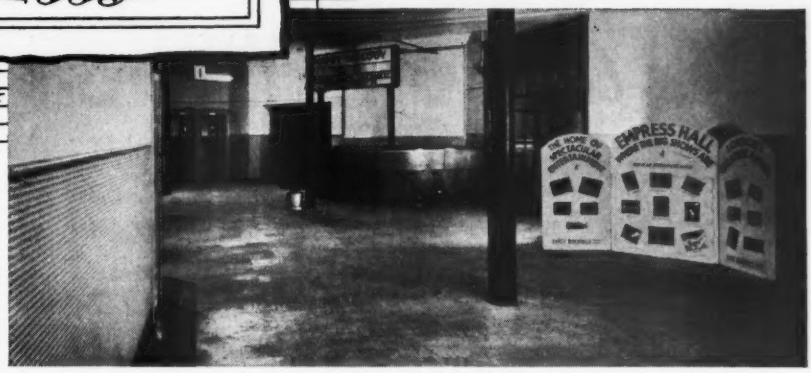

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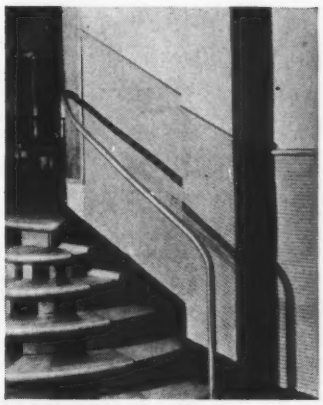

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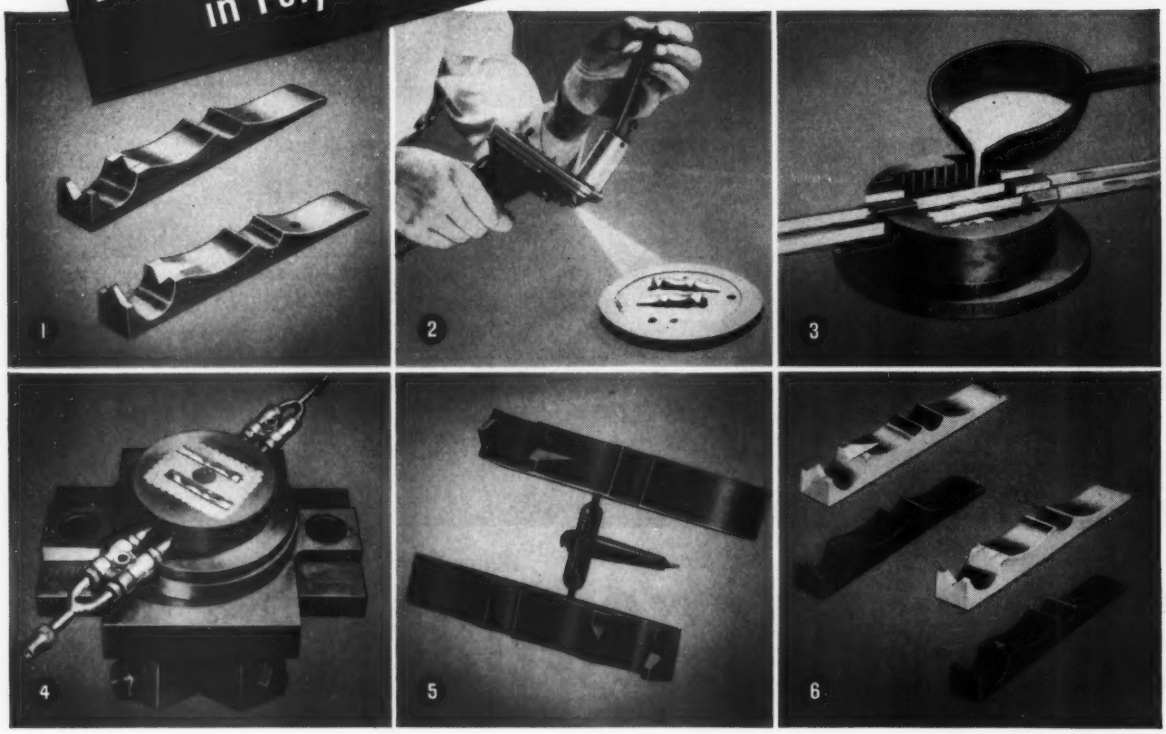

1. Aluminium master pattern.
2. Spraying pattern with Cerrocast.
3. Pouring molten Cerrocast to back sprayed shell and embed water cooling tubes.
4. Complete mould. 5. Typical shot.
6. Comparison of patterns and mouldings.

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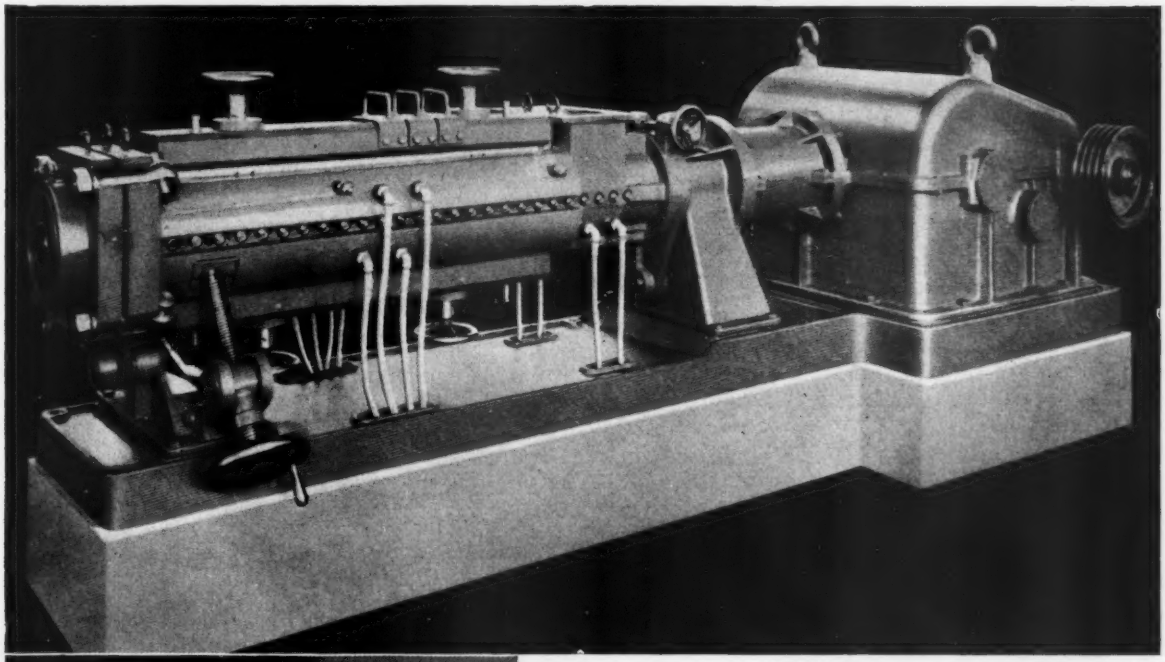

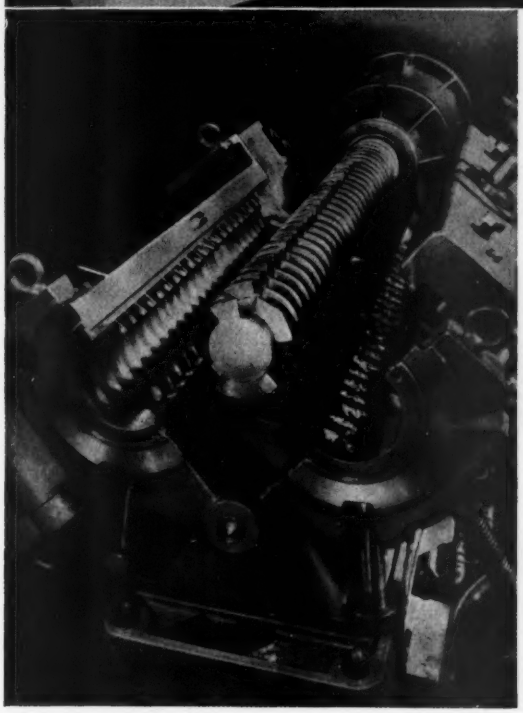

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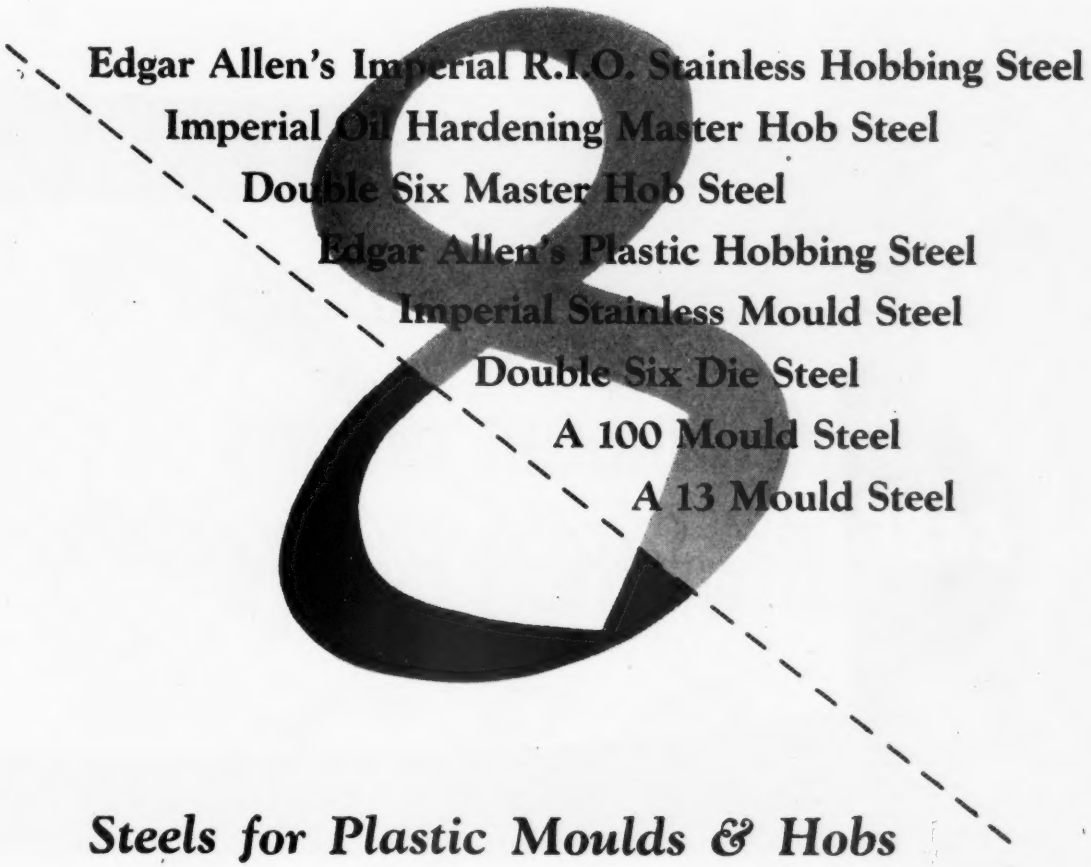
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Imperial Oil Hardening Master Hob Steel
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Double Six Die Steel
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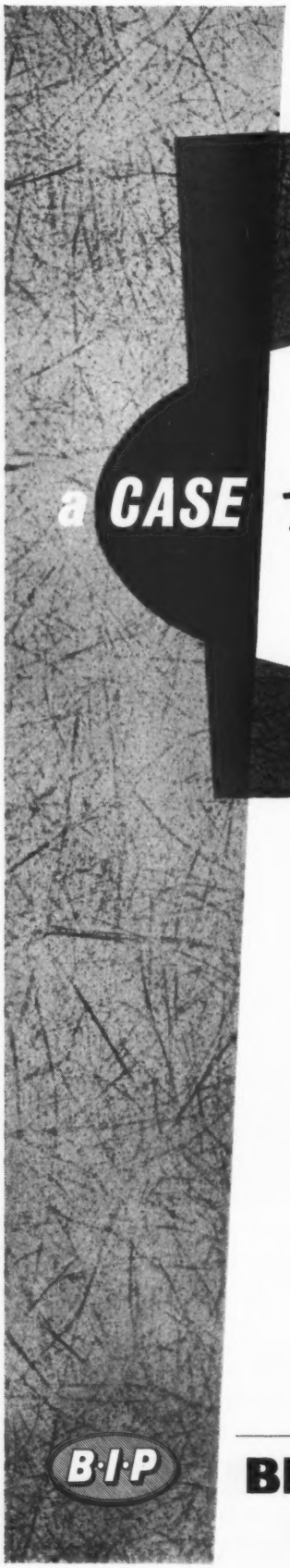

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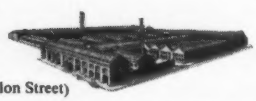

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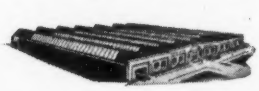

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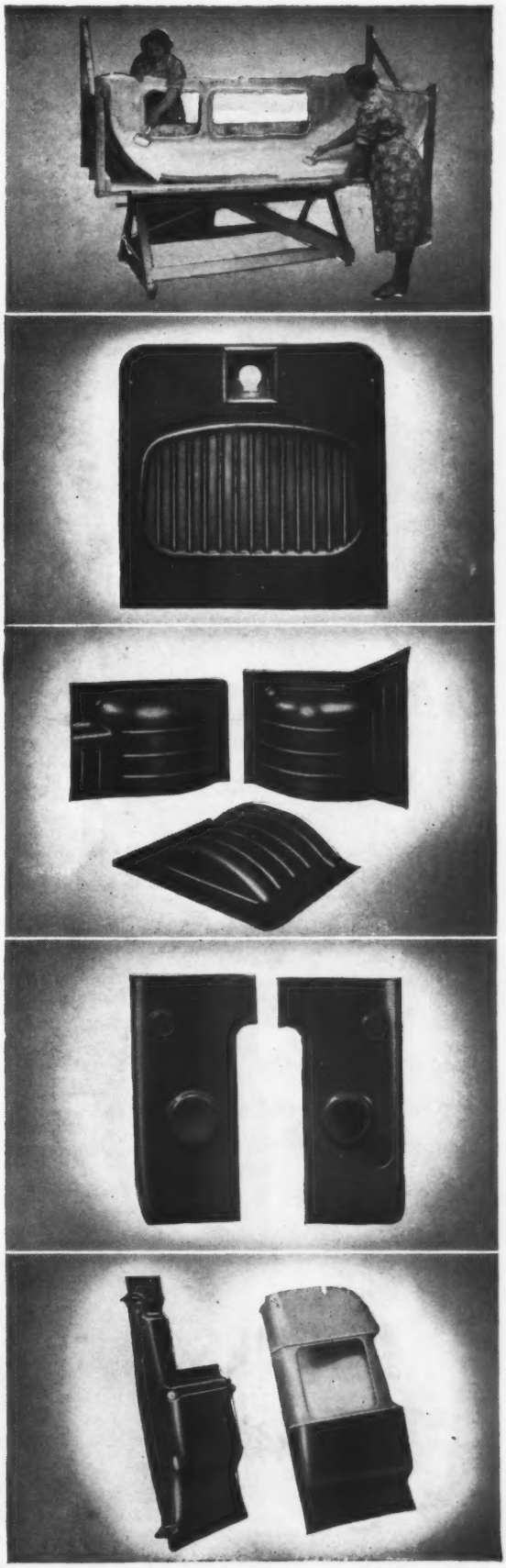

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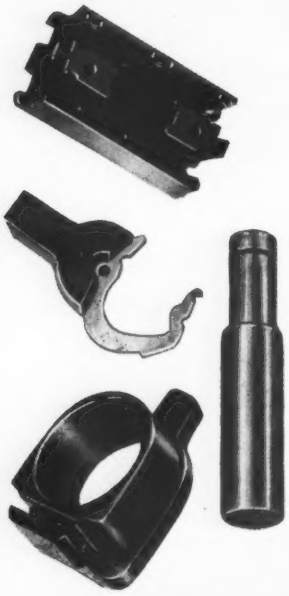

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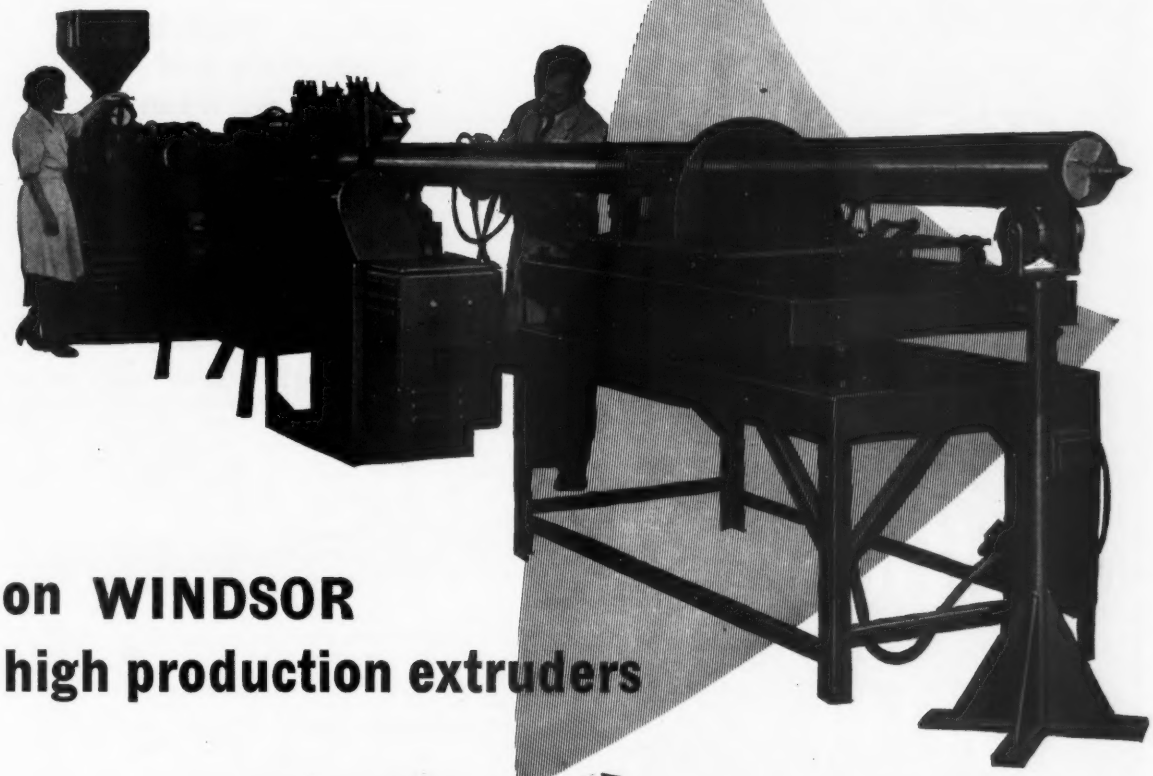
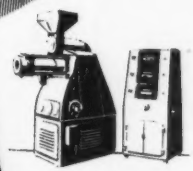
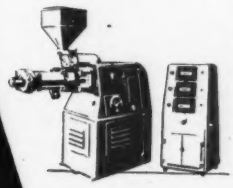


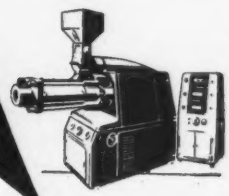
on WINDSOR high production extruders



R.C.65. This is a twin-screw variable-speed extrusion and compounding machine with an hourly output of 65 lb. plus. An automatic feeding device for metering plastic material to the extrusion screws is incorporated and automatic heating regulation is provided.



R.C.100. The R.C.100 twin-screw machine is a medium-capacity extruder with a nominal output of 100 lb. per hour and will operate continuously over long periods, producing tubes, rods and sections in thermoplastic materials. Coated cables, rods and tubes are standard jobs.



R.C.200. Three screws provide this heavy duty machine with exceptional mixing powers. With a nominal output of 200 lb. per hour, constant extrusion pressures, and trouble-free operation, it satisfies the demand for a multi-screw machine of really high output.

The photographs on this page are by courtesy of Messrs. Wallington Weston & Co., Ltd., Frome, Somerset, England. The R.C.100 extruding 6 in. outside diameter pipe from "Fromoplas HT" material.

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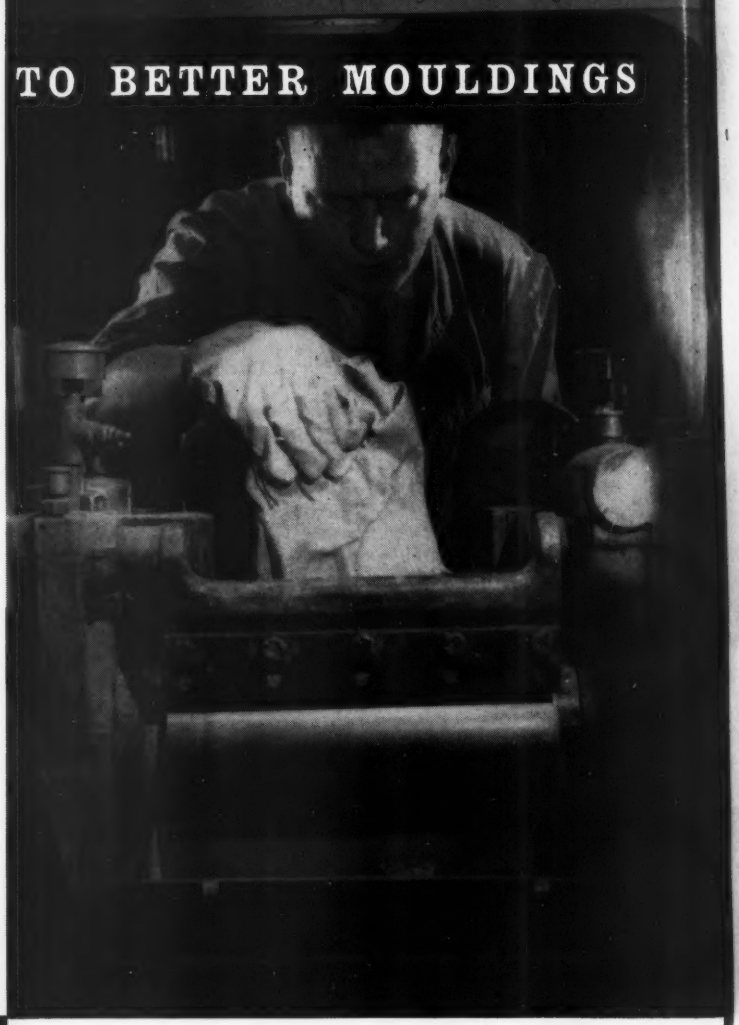
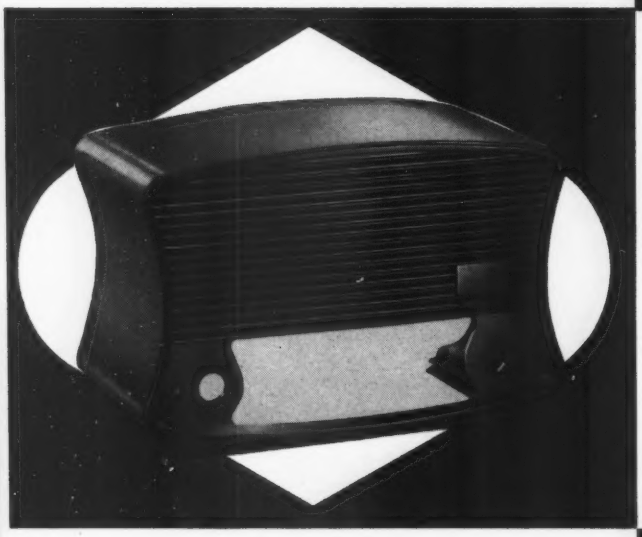
BACKGROUND TO BETTER MOULDINGS

Before full-scale production can start, every new grade of BAKELITE Moulding Material has first to prove itself in the laboratories. Here, factory manufacturing processes are reproduced in miniature. This photograph shows moulding material being hot-rolled in a test plant before being passed on to the grinding machine.





Bakelite Moulding Materials lend themselves to rapid manufacture of all manner of everyday articles, and the ease with which even large mouldings can be produced has helped to achieve savings in both time and money. More significant, perhaps, this method of production has made it possible to incorporate in these articles design which would be impossible or too costly using more conventional materials. The new radio cabinet illustrated is an example of modern design which has taken full advantage of the adaptability of plastics. It would be elegantly at home with any good furnishing scheme, and is typical of the many high-quality large mouldings produced from BAKELITE Materials.

Radio cabinet for E.M.I. Ltd. moulded in BAKELITE Material by British Moulded Plastics Limited.

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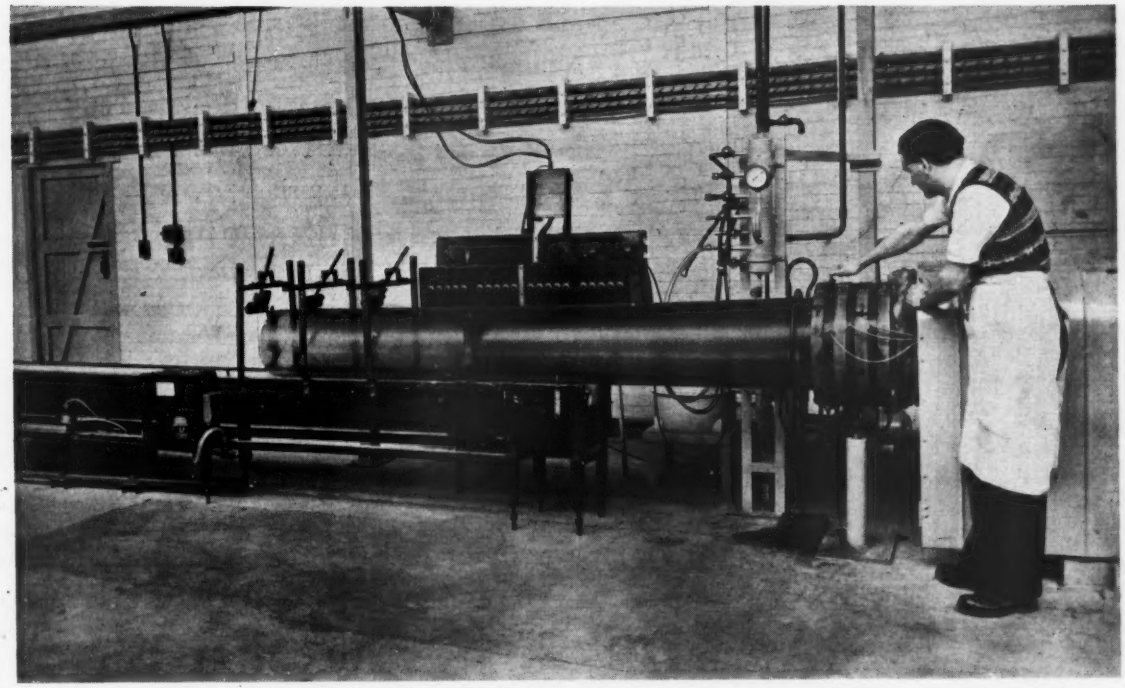
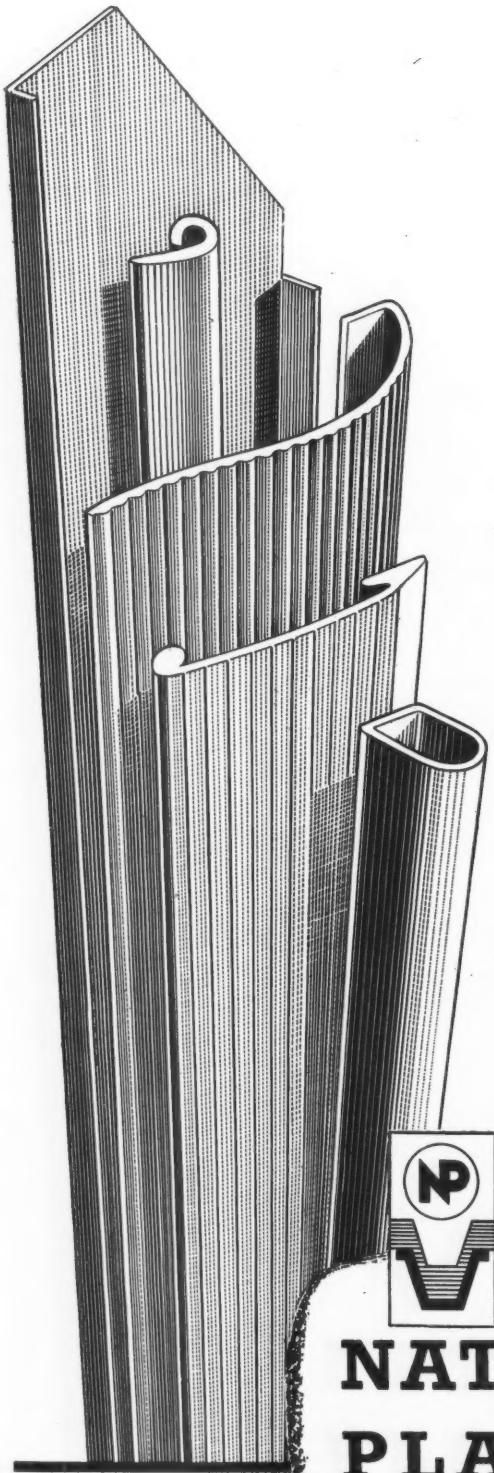
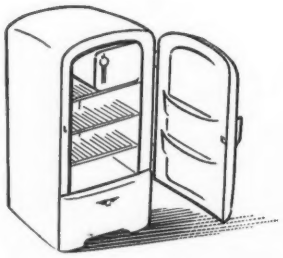


Extrusion of large-bore tubing at the Brantham Works of B. X. Plastics Ltd.





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Plastics

VOL. XX. No. 216 JULY, 1955

EDITORIALS

1957—International?

FROM whatever angle we view the 1955 British Plastics Exhibition, we can only discern the beneficial effect upon our plastics industry in all its phases. Attendance this year exceeded that of 1953 by 20%, overseas visitors also being greater in number. The progress that the industry has made during the two intervening years was more than favourably reflected in this well-organized, brilliant show.

It was especially significant in talking to both exhibitors and visitors whilst the Exhibition was in progress, to note the forward thinking that was taking place. Already plans were in hand for the 1957 Exhibition and already people's thoughts were turning to the shape that it would take.

The most controversial topic for conversation whilst the Exhibition was in progress was the question of whether or not the 1957 Exhibition should be thrown open to the world as an international show. By canvassing personally the opinions of a reasonable cross-section of exhibitors, we were able to discern a wholehearted bias in favour of this fundamental change. This was most marked among the raw materials manufacturers for whom overseas markets are so important, favourably viewed by the moulders and fabricators, and viewed with mixed feelings by the plant manufacturers.

The implications involved in staging an international exhibition are worthy of close consideration. Judged by any standards, such a decision is a big one to make, and careful thought is necessary before changing so fundamentally the nature of an exhibition, which has, up to now, been exclusively British in character. When judged against some of the Continental plastics Fairs, ours has been until now a comparatively small event, the exhibitors never exceeding 100 in number. The very nature of the National Hall at Olympia has inhibited large displays, with the result that we have had, up to now, a compact exhibition which, to the overseas visitor, was probably a refreshing change, not large enough to have lost its identity, not too small to be barren of interest to a wide variety of visitors from home and abroad.

One's instinct rebels at the vast marathon exhibitions sometimes seen on the Continent and which are most common in America where, with the best will in the world, only a small part can be visited, even during a week or a fortnight's stay.

Moreover, once an international exhibition has been agreed, it will be difficult, we think, to set any limit on its size. The Grand Hall at Olympia would permit the doubling of present accommodation, but it is not beyond the bounds of possibility to imagine a still greater spread which might result in a degradation of the exhibition conditions to which we have been accustomed until now.

The effect of an international exhibition on the plastics industry of Great Britain is very much more difficult to evaluate. First of all, it is by no means certain that an international show would in itself result in more business being done by British exhibitors. In fact, to be more successful than in its present form, it would have to be carried to the point where it was regarded as the pre-eminent show of its kind in Europe.

This would no doubt bring about a substantial increase in the number of overseas visitors and would be of tremendous value to the industry, both from the standpoint of the raw material manufacturer and the machinery manufacturer. It was, in fact, this point that so much concerned the many people with whom we discussed this question during the exhibition itself; all but a very small percentage were anxious to see the biennial Plastics Exhibition in Britain established as the most important European Fair.

One immediate effect of an international exhibition would be to provide a strong incentive to all sections of the industry in this country towards improvements of products. The effect would be to relate directly progress abroad with progress in this country, since, very obviously, any falling behind here would be shown up to the disadvantage of our own industry at every successive exhibition. A spirit of competition would be introduced which would significantly contribute towards the well-being of our own industry, both in terms of our domestic market and our potential overseas market. Viewed in terms of cause and effect, the mere fact that moulders and fabricators would be able to see at first hand the progress made by similar companies abroad, would bring about a demand by the moulders and fabricators for improvements in raw material, plant and equipment to which at the moment they may be apathetic.

At all events, it seems almost certain now that in 1957 we shall have the first of the International Plastics Exhibitions. To this we look forward with, on the whole, unmixed feelings. It is something we have long hoped would come about and which will, we are sure, be ultimately to the benefit of the whole of our industry. And as a purely secondary result we can imagine a vast improvement both in the quality and variety of papers read and in the attendance at the Convention, which we assume, would be run concurrently with the Exhibition.

Our industrial history shows that whenever we open the gates we benefit in one way or another. Nothing but good resulted in the adoption of French, German, Swiss and other nations' methods and inventions to our great textile, synthetic dye and chemical industries. The great margarine industry, born in Paris during its siege in the Franco-Prussian War, was developed here by the Jurgens and the Van den Berghs. Our petroleum industry has benefited enormously by infusion of American and Dutch influence while our modern plastics industry shows even more clearly the advantages of international co-operation. Brains are not the prerogative of any one nation although one nation may advance more rapidly than another by the quality, vigour and extent of its educational activities.

The Small v. The Large

ONE of the most interesting trends to emerge from the Exhibition was the present divergence in viewpoints between Great Britain and Germany in the matter of injection machine design. The leading machinery manufacturers in Germany are moving towards the greater production of small

machines of 2-oz. capacity, clearly designed to operate with single cavity moulds, as against the trend which has been observed here for some time towards the manufacture of larger machines, with the frequent employment of multi-cavity tools to keep such machines in economic operation. Taking the recent Federation figures as an example, there are 167 8-oz. machines in use amongst its members, a figure larger than any other size. The question has been debated at length before, and we in this country are only following a smaller pattern set in the United States. Whereas before, however, the question has been argued on purely theoretical grounds, we now have a concrete example of a country which evidently disagrees with our views.

As a possible reason for this difference of opinion we must remember that although the industry has experienced one serious recession since the end of the late war, it is true to say that plastics have in common with British industry as a whole, expanded on the basis of a seller's market. In such times, economic refinements are inclined to go by the board. It is more important to keep machinery moving than to halt the progression.

The use of the larger machines in this country, to judge from the present situation, has been eminently successful. We are now using as an industry far larger machines than was the case four years ago. We may even, in certain respects, claim to be among the giants in this field since the Ekco injection moulded radio cabinet, weighing some 42-oz. is probably the biggest product of its kind in the world. These large units are, however, not within the scope of the real point at issue. In numbers, the giant presses of 36-oz. and upward capacity are few and far between when compared with the very large numbers of 2-, 4-, 6- and 8-oz. machines commonly used. If the German trend were to be copied here we might expect to see the necessity for greater floor space in factories by virtue of a larger number of smaller machines and further demands on the already hard-pressed tool-making industry.

Nevertheless, one German manufacturer, at least, is planning a great increase in his production lines for the 2-oz. machine, designed to work in batteries of six and to cycle automatically, with one attendant per battery. Such a move will certainly have the effect of creating a greater flexibility on the part of the industry to meet the varying needs of its customers. Barring a general recession a plastics industry so formed would be eminently well placed to cope with any confined recession that might occur in one or other of its industrial customers.

Other points arise from the foregoing. One reason for the use of more small injection machines and fewer larger ones than we have, may be that Germany has progressed less in certain fields of plastics such as refrigerator, radio-cabinet and television industries and in domestic ware where large and medium-large components are commonly used; alternatively the small injection machine of 2 oz. capacity is ideal for most industrial work and the large toy and fancy goods trades that Germany possesses. It would be interesting to know how far vacuum forming takes charge of the hiatus in Germany. We must also remember that Germany has great facilities for exporting to certain East European and Near East countries with considerable village industries where the small machine is welcome and larger ones out of the question. Examination of a machine manufacturer's statement on output must take this into consideration.

MOULDING POWDER AND SHOT

Clean Bananas at last!

Six months ago I went to a factory where large bags of polythene used for covering and transporting whole stems of bananas were being washed free from adherent gum and dirt and processed for re-use. I now learn from *The Financial Times* that some 10 tons a week of Diothene (the polythene film made by Metal Box Co., Ltd.) are used for this purpose alone and that the quantities will increase. The film is thick, protecting the delicate fruit from mechanical, physical and bacterial spoilage, so that it arrives in this country in the very best of condition. High initial cost, but savings are greater.

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Other People's Views

I really don't know what these fellows will do next! The younger staff of this journal, I mean. It's a bit thick! Without a by-your-leave and behind my back, when I'm spending a short week-end fishing for tarpon at my old haunt, Wapping Old Stairs, after an exhausting time at the Exhibition, they start interviewing high-up overseas visitors and getting their talks down on a tape-recorder for your entertainment and my enlightenment. It's all published in this issue on pages 250 to 253 and a very bright piece of work it is too, if I may grudgingly say so, collaring highly intelligent visitors from Switzerland, Sweden, the Argentine, U.S.A., Norway and Denmark—and there's more to come next month. I like the variety, the unprepared, uninhibited talk and the natural unstilted language printed as spoken.

◆ ◆ ◆

Cave Woman, 1955

Technical publicity takes a multiplicity of forms—as many indeed as there are of the written word and of pictorial art with which it is now so often combined. The essence of any publicity is that the eye must be urged to rest on it and the brain to absorb something, whether it be knowledge or beauty or humour. The very informative is not always necessary as typified by, say, Birkby's simple photographs of beautiful spots in England with Birkby's address at the bottom in small type, or by Mr. Mason's solitary and lovely extrusion machine bearing the name Mason but without any address at all, which resulted in an Eskimo friend of mine who extrudes candles telegraphing me: "Dovè sta igloo Mason?" which, as you well know, means, "Where's this bloke's factory?"—so that he got, and so did Mason, what he wanted after all. The modern form of publicity, the humorous form, is really a reflection of supreme confidence of the company issuing it, and I believe is only practised in England. The prime movers in our journal appear to have been Desoutters and James Fergusons, while the famous picture in *Punch* of an utterly heart-broken bull leaving a modern "china" shop moaning "Plastics! Plastics!", gave us one of the best examples of how to do it with a minimum of words and lines. The latest example was seen at the Exhibition, where I.C.I. issued its "Cavewoman's Guide to Plastics," a booklet which went like hot cakes. The illustrations provided the humour, for the cavewoman, hairy caveman and their malevolent offspring with the horrifically moronic expressions of the pests of St. Trinians, attempted to destroy everything in sight in the modern cavewoman's home with complete absence of success. The booklet also contains some sound common sense on how to take care of plastics, as well as showing, painlessly, the important uses for I.C.I. plastics in the home. The best attempt I have yet seen to bring the busy housewife to terms with plastics.

DOGSBODDY.

Liquid Glue Test on P.V.C. Sheet.

Plastics Exhibition 1955 Reviewed

This exhibition followed a record year for the Plastics Industry of Great Britain.

This sense of buoyancy no doubt assisted in making it the most successful Plastics Exhibition yet held.

JUST over 35,000 visitors passed through the turnstiles of Olympia, from June 1 to 11, to see the British Plastics Exhibition. A measure of the interest the exhibition created is that this attendance figure was 20% higher than that for 1953, this at a time when the country was in a state of emergency and when travel of any sort was extremely difficult. Had it not been for the railway dispute there can be no doubt that attendance would have been considerably higher. Despite all the difficulties, however, 1,781 overseas visitors arrived from 74 countries and, as will be seen later in this review supplement, found their visit very well worth while.

Perhaps the most important criteria of any exhibition is that it should be truly representative of all shades of opinion on branches of the subject it portrays. In this respect the Plastics Exhibition achieved a delicate balance, in that all phases of the industry were represented, and each in due proportion to the other. Materials manufacturers figured largely, as well they might, but did not overawe the moulders and plant manufacturers. Within the National Hall was concentrated a facet of each and every constituent part of the plastics industry, and both in quality of products shown and method of presentation, the exhibitors can congratulate themselves. Likewise the organizers, Associated Iliffe Press, Ltd., who, under trying conditions, conducted a smoothly-running programme with aplomb. The next exhibition will be in July, 1957.

And now, by way of introduction to this special supplement to *Plastics*, may we point out that the arrangement generally follows that of the June issue. Under the three main headings, Materials, Fabricators and Machinery, will be found a survey of the important and novel exhibits. Each paragraph heading is designed to pinpoint the item of interest and, for ease of reference, the exhibitors have been arranged in alphabetical order. The report is illustrated with photographs of both specific exhibits and also stands.

Design at the Exhibition

A noteworthy feature of this year's exhibition was the panel convened by the Plastics Institute and consisting of eminent men in the design field. Sir Gorden Russell, Director of the Council of Industrial Design and a member of the panel, has contributed an appreciation of the design of exhibits. His comments will be of interest to the industry as a whole, and particularly to the members of the Design Committee of the Plastics Institute.

"Recorded Views"

And, lastly, will be found an interesting experiment, the sampling of views of overseas visitors by means of conversations recorded at the exhibition. Every attempt was made to avoid "leading" the visitor, with the result that the comments offered shed considerable light on the reactions of those from abroad.

"Plastics" stand at the exhibition.

MATERIALS

MATERIALS for plastics moulding and fabricating were extremely well represented at this year's exhibition. All the major moulding-powder manufacturers were present, together with a strong contingent representing the ancillary materials, particularly colouring agents, plasticizers and stabilizers. Amongst the newcomers in this field were Pure Chemicals, Ltd., and Howards of Ilford, Ltd.

As in the other sections of this review, the exhibitors are listed in alphabetical order; the paragraphs describing specific exhibits are headed in each case to identify the subject of special interest, and readers will find it helpful to relate this review with the exhibition preview constituting a special supplement to *Plastics* in the June issue.

Apart from photographs of exhibitors' stands, to give a pictorial impression of the exhibition to those who were not able to be present, various exhibits were also photographed and, where space permits, these are introduced in the text matter, adjacent to the relative paragraph.

Reinforced Plastics

ONE of the most impressive stands was that of B.I.P. Chemicals Ltd., designed to demonstrate the versatility of polyester resins used in conjunction with glass reinforcement. The focal point was a car bonnet, one half of which was painted, the other half left as it came from the mould. The complete unit was mounted on a revolving table, so that the top and the underside could be inspected. Grouped around were other examples of production fabrications, including a dinghy hull. Undoubtedly the best way to secure progress in this reinforced plastics field, is to show, by means of actual examples, what can be done, and in this B.I.P. Chemicals were most certainly successful.

B.I.P. Chemicals Ltd., 1 Argyll Street, London, W.1.

High-gloss P.V.C.

FOR handbags, wallets and fancy goods, B.X. Plastics showed a new range of p.v.c. sheeting having a very high surface gloss.

B.X. Plastics Ltd., Higham Station Avenue, London, E.4.

Large Extrusion

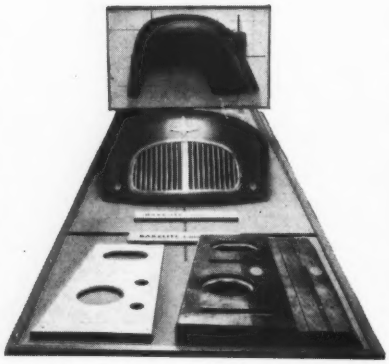
SUSPENDED from the ceiling of the B.X. Plastics Ltd. stand was a 45-ft. length of 16-in. polythene extruded tubing. This exhibit created great interest since it was the largest yet to be seen at an Exhibition in this country, both in diameter and length. The tube was brought up river from the Brantham works of B.X. by barge and afterwards carried by a team from the Thames-side through to the National Hall at Olympia.

B.X. Plastics Ltd., Higham Station Avenue, London, E.4.

Reinforced Plastics

THE central feature of the Bakelite Ltd., stand was the use of Bakelite resins in the production of reinforced plastics for boats, cars and the engineering industry. A complete boat hull and a car body provided a full-scale demonstration of this aspect of the plastics industry. Of equal interest were similar units employing polyester and phenolic resins, with paper, wood and glass forming the reinforcing elements, shown on the centre of the stand.

Bakelite Ltd., 12-18 Grosvenor Gardens, London, S.W.1.



Reinforced plastics on the stand of Bakelite Ltd.

Phenolic Resins

BY means of finished mouldings, Birkbys demonstrated the high-quality powders which they for many years have manufactured.

Birkbys Ltd., Liversedge, Yorkshire.

Perfumes for Industry

DEODORANTS manufactured by A. Boake Roberts and Co., Ltd., eminently suitable for use in the majority of plastics materials, were featured on the company's stand.

A. Boake Roberts and Co., Ltd., 100 Carpenters Road, London, E.15.

Plastics in the Mines

THE extent to which plastics are invading our coalfields was well illustrated by the British Geon display. Three life-size miners were shown working a 4 ft. 6 in. seam and loading coal onto a non-inflammable p.v.c. conveyor belt. This display underlines one of the major p.v.c. developments in recent years in which British Geon has played a leading part. Today, many thousands of tons of p.v.c., itself derived from coal, are required to satisfy the National Coal Board demand for non-inflammable belting. To be specially commended was the presence on the Geon stand of two miners from South Wales who were able to speak with personal experience of the high qualities of this p.v.c. belting, providing not only a higher safety factor in the mines, but also offering great durability in use.

Another aspect of p.v.c. used in the pits was demonstrated by a 12-in. diameter p.v.c.-coated ventilation tube, rot proof, corrosion resistant and fire resistant. Adjacent to this was a length of p.v.c. brattice cloth and p.v.c. insulated mining cables. Miners' boots with hard p.v.c. toe caps were shown and electrical accessories in Rockite phenolic material. As a comprehensive display designed to show not only the scope of the company's products but also the impact on mining of plastics materials, this stand was worthy of high commendation.

British Geon Ltd., Devonshire House, Piccadilly, London, W.1.

Polyvinyl Pyrrolidone

FIRST made and used in Germany during the late war, polyvinyl pyrrolidone is now becoming available from the British Oxygen Co., Ltd.'s new plant in an industrial grade either as a solid, or as a 30% aqueous solution. One of the applications suggested for this material is its use as a water-soluble adhesive.

British Oxygen Co., Ltd., Chemicals Division, Bridgewater House, London, S.W.1.

Polyvinyl Acetate

USED both for adhesives and for emulsion paints, some applications of polyvinyl acetate were demonstrated on the stand of British Oxygen Co., Ltd. Polyvinyl acetate, insoluble in water, exhibits a high degree of adhesion to a variety of materials and the B.O.C. plant for its manufacture in Co. Durham has recently gone into production.

British Oxygen Co., Ltd., Chemicals Division, Bridgewater House, London, S.W.1.

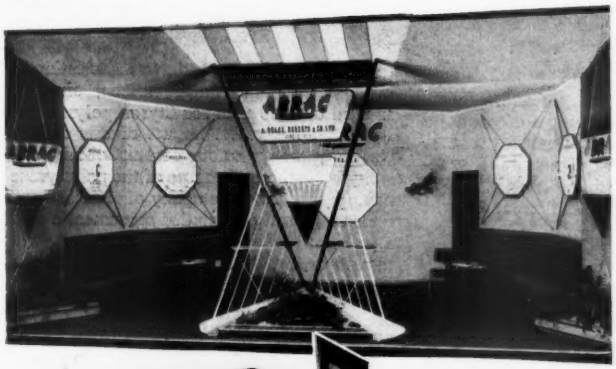
Plastics in Transport

BRITISH RESIN PRODUCTS LTD., took as the theme of their stand "Plastics in Transport." Over 200 exhibits were arranged in these groups, plastics in aircraft, buses, coaches, cars, commercial vehicles, ships and boats, and trains. By means of this exhibit British Resin Products were able to show how their many ranges of synthetic resins, moulding materials, adhesives and

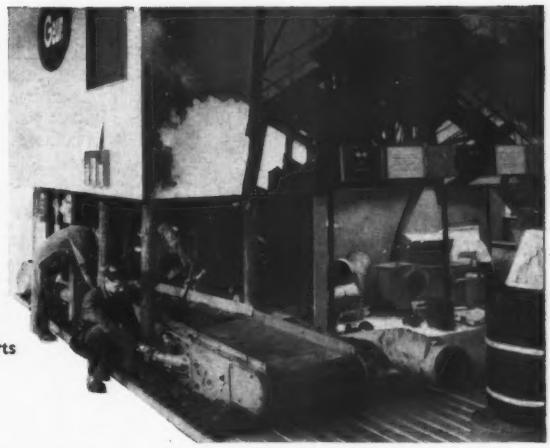
(Left) Bakelite and Warerite Ltd.

(Above) British Oxygen Co. Ltd.

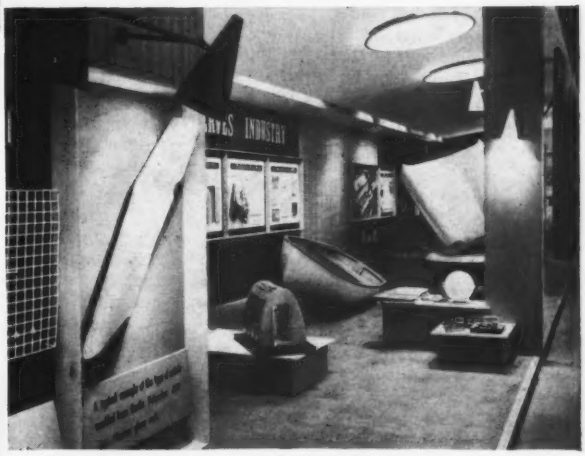
(Below) British Geon Ltd.



(Above) A. Boake Roberts and Co. Ltd.

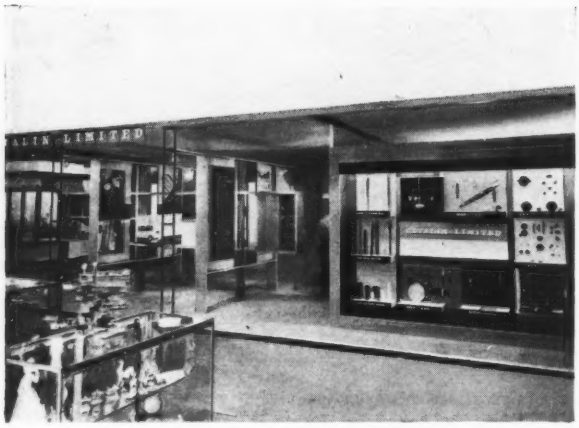


(Left) B.X. Plastics Ltd.

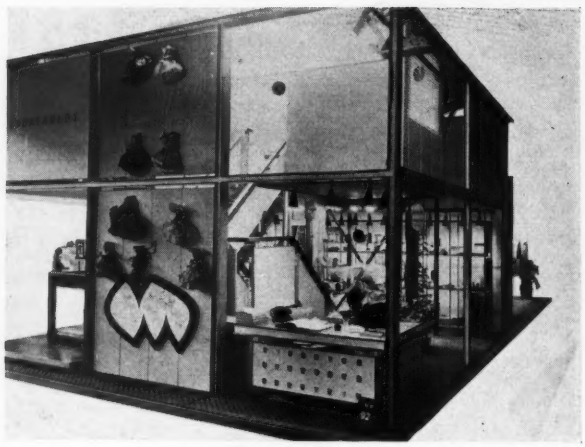


(Above) British Industrial Plastics Ltd.

(Left) British Resin Products Ltd.



The stand of Catalin Ltd.



Courtaulds' display

allied products are being employed in construction and equipment of varied forms of transport.

British Resin Products Ltd., Devonshire House, Piccadilly, London, W.1.

Canadian Government Exhibit

FOURTEEN firms, engaged in the production of chemicals and plastics, were represented in the Canadian chemical and plastics display. This was the first occasion on which such a comprehensive exhibit of Canadian chemicals and plastics had been arranged in the U.K. and demonstrates the remarkable increase in the output of chemical production in Canada. The value

MATERIALS

of chemicals produced in 1954 is estimated at $900m., the highest figure on record.

The end products shown on the stand included boots, coats, hats and umbrellas in p.v.c., and some very attractive mouldings in urea and melamine for table purposes.

Office of the High Commissioner for Canada, Canada House, London, S.W.1.

Fibreglass reinforcement has been used in the construction of the bodywork of this motor-scooter.

Roof Lighting

RECENTLY introduced by Catalin Industrial Resins Ltd. is a range of polyester glass-fibre reinforced sheeting, in corrugated and other profiles, for skylights, walls, partitions, ceilings, signs, displays, etc. Examples of the range were shown on the stand of the company.

Catalin Industrial Resins Ltd., Waltham Abbey, Essex.

Cast resin handles

Knife Handles in Cast Phenolic

CREATING considerable interest on the stand of Catalin Industrial Resins Ltd., was the display of handles for knives, kitchen equipment and the like fabricated from the cast phenolic material manufactured by the company. Enjoying a wide sale in the North American market are the cast replicas of animal horn, cleverly designed and being difficult to detect from the natural product.

Catalin Industrial Resins Ltd., Waltham Abbey, Essex.

Polythene Filament

ATTRACTING wide attention, was the polythene filament, Courlene, finding use as upholstery covering and for the manufacture of protective clothing.

Courtaulds Ltd., Little Heath, Coventry.

Styrene in the Kitchen

TO American housewives Styron has become a symbol of reliable plastics housewares. A kitchen display, full size, on the stand of Distrene Ltd., was interesting to every visitor, men and women, since it showed over 50 uses for Styron polystyrene. Perhaps the greatest impact of this display was the effective colour contrast obtained.

Styron is the trade name of the polystyrene made by the Dow Company of America and under a recently concluded agreement a new Distillers/Dow company, Distrene Ltd., will manufacture Styron in this country. A new plant is being built at Barry, Glamorgan, and production will commence shortly.

Distrene Ltd., Devonshire House, Piccadilly, London, W.1.

Polystyrene Sheet for Vacuum Forming

A NOTABLE gap in the materials suitable for vacuum forming has been filled by the introduction of the Erinoid polystyrene sheet, Grade CP20. Now being produced at Stroud, Gloucester, examples were shown on the stand to demonstrate the suitability of this form of manufacture.

Erinoid Ltd., Lightpill Mills, Stroud, Gloucester.

Urea Moulding Materials

ONE of the chief exhibits on the stand of James Ferguson and Sons, Ltd., was the company's range of urea moulding materials produced in various grades and in a very wide range of attractive pastel colours.

James Ferguson and Sons Ltd., Prince George's Road, London, S.W.19.

Reinforced Plastics for Motorcycles

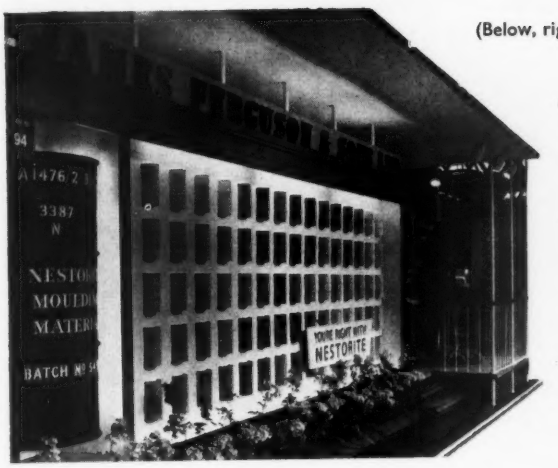
ATTRACTING much interest on the stand of Fibreglass Ltd., was the bodywork of the Harper Scootomobile, manufactured by the Harper Aircraft Co., Ltd., and carried out with the aid of Fibreglass reinforcement. Many comments were passed on the excellent styling of the unit which incorporated some intricate three-dimensional curvatures.

Fibreglass Ltd., Ravenhead, St. Helens, Lancs.

Colours for Plastics

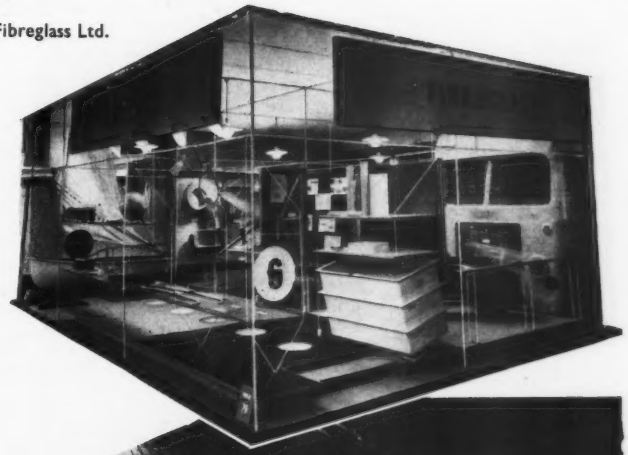
A WELL arranged and designed stand amplified the company's extensive research and development service, especially in the field of colours.

Geigy Co. Ltd., Rhodes, Middleton, Manchester.



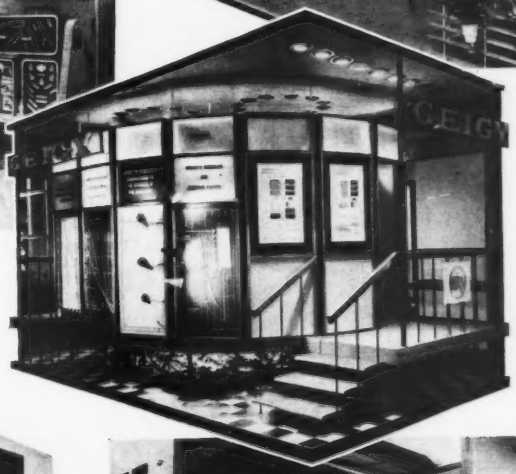
(Above) James Ferguson and Sons Ltd.

(Below, right) Fibreglass Ltd.

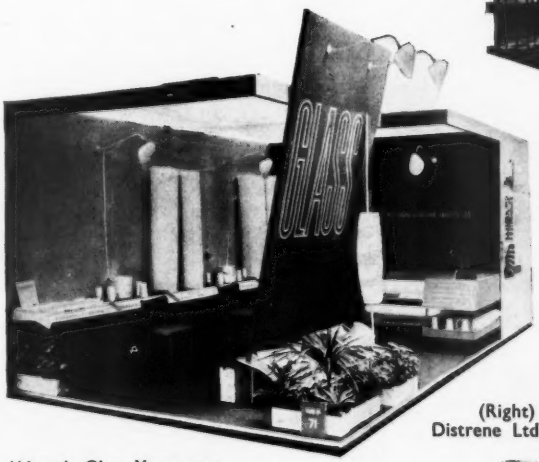


(Above) Styrene Products Ltd., Erinoid Ltd., and Utilex Ltd.

(Above) Grist Plastics Ltd.



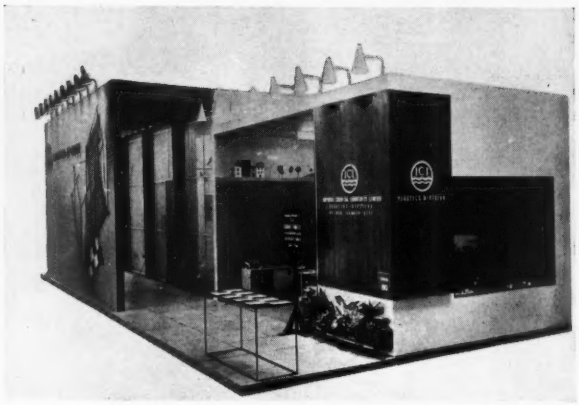
(Left) Geigy Company Ltd.



(Above) Glass Yarns and Deeside Fabrics Ltd.

(Right) Distrene Ltd.

Howards of Ilford.



Imperial Chemical Industries Ltd.

P.V.C. Coated Glass Fibre

Displayed on the stand of Glass Yarns and Deeside Fabrics Ltd., was an interesting experiment, the coating of glass fibre with p.v.c. This experimental work culminated just after the Exhibition had opened and samples were rushed down from the company's factory for display.

Glass Yarns and Deeside Fabrics Ltd., 121 Kingsway, London, W.C.2.

Re-processed Plastics

Examples of what can be done to reconstitute plastics materials which have already passed through injection moulding and extrusion plant were shown on the stand of Grist Plastics Ltd.

Grist Plastics Ltd., 82-84 Brighton Road, Surbiton, Surrey.

"Cyclic" Chemicals

Exhibits showed how Cyclic solvents, plasticizers and other chemicals can be used in the production of high-quality plastics.

Howards of Ilford Ltd., Ilford, Essex.

Plastics in the Kitchen

TO demonstrate the range covered by I.C.I. plastics, a complete kitchen unit, at full scale was shown on the company's stand. In this way the company was able to show the very wide use of polythene, p.v.c. and Perspex, supported by nylon and other I.C.I. plastics.

I.C.I. Ltd., Plastics Division, Black Fan Road, Welwyn Garden City, Herts.

MATERIALS

High Impact Polystyrene

A NOTABLE feature of the stand of Kleestron was a high impact grade, Kleestron H polystyrene moulding compound. This material attracted considerable interest, especially on the part of visitors from at home and abroad interested in extending their ranges of merchandise into applications where general purpose material is considered satisfactory.

Kleestron Ltd., West Halkin House, West Halkin Street, London, S.W.1.

Cellulose Filled Urea Powders

A SPECIAL filler of the cellulose group is used in the manufacture of the Supertone C urea formaldehyde moulding powder manufactured by Lacrinoid Products Ltd. Giving high transparency, and extra lustre, this powder is particularly suitable for the manufacture of buttons and costume jewellery.

Lacrinoid Products Ltd., Gidea Park, Essex.

Plasticizers

Amongst the plasticizers featured on the stand of Lankro Chemicals Ltd., were di-iso-octyl phthalate and di-iso-octyl sebacate, both of which are now freely available for the first time in this country.

Lankro Chemicals Ltd., Salters Lane, Eccles, Manchester.

Polystyrene

MONSANTO PLASTICS featured as one of their many exhibits the Lustrex Hi-Flow polystyrene, especially designed for intricate mouldings which require a long flow. For complex mouldings involving delicate inserts this material is especially useful.

Monsanto Plastics Ltd., Victoria Station House, London, S.W.1.

Stabilizers

The Stanclere stabilizers based on organo tin compounds were given special prominence together with some typical examples of articles manufactured from vinyl materials incorporating the use of these stabilizers.

Pure Chemicals Ltd., Kirkby Trading Estate, Liverpool.

Polyester Resins

THE stand of Scott Bader and Co. Ltd., demonstrated the prominent position this company holds in the field of polyester resin manufacture. This year the company has been able to claim usage of Crystic 189 for the moulding of the world's largest plastics boat hull, 54 ft. long.

Scott Bader and Co. Ltd., Wellingborough, Northants.

Epoxy Resins

NOW in full production, the epoxy range of Epoxide resins formed an important part of the display of Shell Chemicals. Examples were shown of their use for laminating and casting in, for example, the aircraft, electrical and chemical industries.

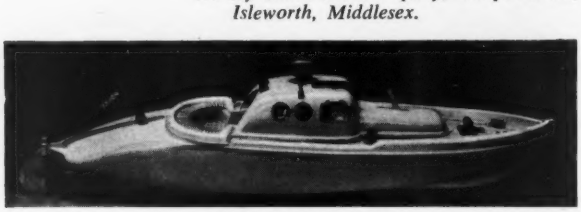
Shell Chemicals Ltd., 105-109 Strand, London, W.C.2.

Vacuum-formed Toy Boat

TO demonstrate the properties of Vitrone rigid vinyl sheet, Stanley Smith and Company had on view a vacuum-formed model police launch. The boat is formed in several sections, the two halves of the hull being welded together, and the superstructure fitting into a recess. The manufacturers of the launch are Wilmot Mansour Co., Ltd.

Stanley Smith and Company, Worple Road, Isleworth, Middlesex.

(Left) Kitchen on the stand of I.C.I. Ltd.



(Above) Stanley Smith's material was used to vacuum-form this toy.

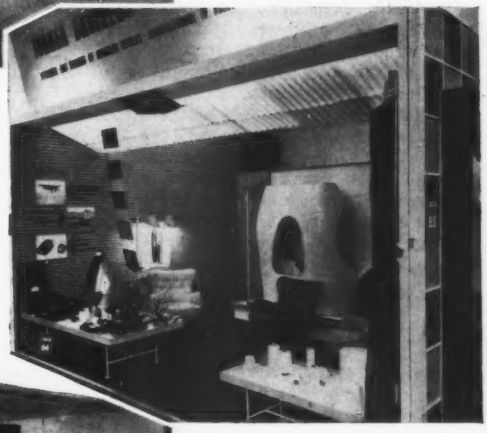
(Above) Pure Chemicals Ltd.

(Above) Kleestron Ltd.

(Left) Vinyl Products Ltd., and Vinatex Ltd.

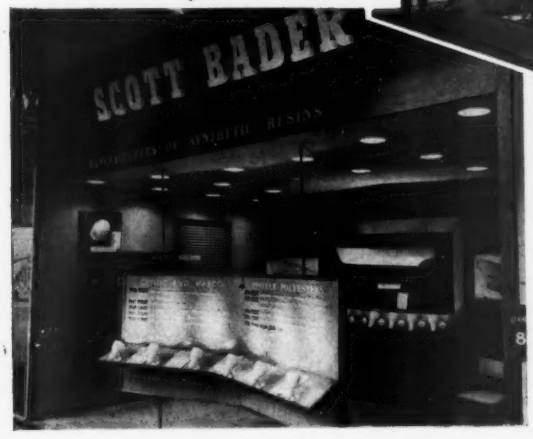
(Below) Lankro Chemicals Ltd.

(Below) Turner Brothers Asbestos Co. Ltd.

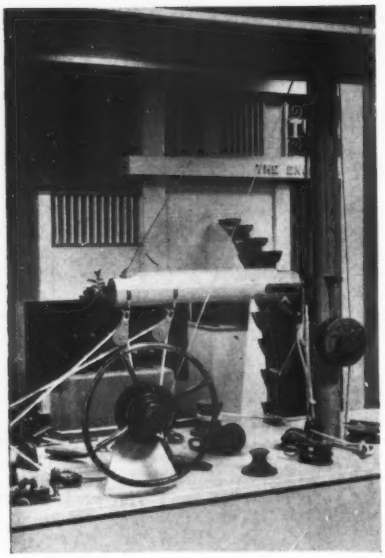


(Right) The Wiggins Teape Group

(Below) Scott Bader and Co. Ltd.



(Below) Shell Chemicals Ltd.



Marine applications of Tufnol.

Heat Resistant Polystyrene

SHOWN on the stand of Styrene Products, Ltd., was the heat resistant high molecular weight polystyrene, Grade 2CL/HS, which in fact combines the properties of 2CL Grade and HS Grade. 2CL has an all-round strength, some 50% greater than general purpose polystyrene and the H.S. Grade is capable of withstanding 85° C. continuous temperature. This combination of properties gives a material particularly suited to the manufacture of monofilaments for brushes.

Styrene Products Ltd., 96-7 Piccadilly, London, W.1.

MATERIALS

Marine Applications of Plastics

TUFNOL LTD., have specialized in the use of their laminated materials for marine applications. An interesting display was the complete running gear for a dinghy, including fairleads, blocks, cleats and roller reefing gear. The use of Tufnol in this sphere is steadily growing by virtue of its strength, despite lightness in weight, outstanding resistance to all weather conditions, absence of corrosion and, from the point of view of the manufacturer, ease of fabrication.

Tufnol Ltd., Perry Barr, Birmingham, 22B.

Asbestos Reinforcement

OF considerable importance are the asbestos materials bonded with phenolic resins, giving structural materials of high strength and temperature stability. Turner Brothers showed many interesting examples of the applications of this material on their stand.

Turner Brothers Asbestos Co., Ltd., Spotland, Rochdale.

Metallized Film

ONE of the latest developments in the film section of plastics industry is the metallizing of acetate sheet. Examples of its use in the packaging industry were being shown by Utilex Ltd.

Utilex Ltd., Mill Street, Kingston-on-Thames, Surrey.

Coconut Shell Fillers

THE use of coconut shell flour in the manufacture of mouldings powders has been steadily gaining ground in recent years. With the ability to replace part or all of the wood flour filler normally employed, the high lignin content of the shell flour reacts chemically with the phenolic resin to form an extended thermosetting moulding composition. The immediate advantage of the process is the reduction of the resin content from 50% normally employed down to as little as 30%. J. H. Vavasseur and Co., Ltd., showed examples of the products of powders filled in this way on their stand.

A moulding powder employing Vavanite as the sole filler has been prepared with the following characteristics: tensile strength 10,800 p.s.i., water absorption 0.06% 24 hours immersion at 20° C.

J. H. Vavasseur and Co., Ltd., 15-16 America Square, London, E.C.3.

P.V.C. Colour Concentrates

CONSISTING of flexible p.v.c. compounds in granular form, and containing a high proportion of pigment, the Vinatex colour concentrates are specially manufactured for colouring natural p.v.c. compounds particularly for extrusion purposes. They were featured on the stand of Vinatex Ltd., and created considerable interest, particularly by virtue of the extensive range of standard colours available. The usage of these concentrates can effect a considerable economy by reducing the range of stock compounds. Simple drum or tumbler mixers can be used for blending the granules.

Vinatex Ltd., Devonshire Road, Carshalton, Surrey.

P.V.C. Emulsions

TINS of proprietary brand paints manufactured by famous companies in the paint industry were featured on the stand of Vinyl Products Ltd., to demonstrate the latest Vinamul range of p.v.c. emulsions. P.v.c. in emulsion form is used in very large tonnages, estimated to be in the order of 20,000 tons in 1954, for the manufacture of washable paints and Vinyl Products are one of the major producers of these emulsions.

Vinyl Products Ltd., Butter Hill, Carshalton, Surrey.

Colours for Polystyrene

WILLIAMS (HOUNSLOW) LTD., long associated in the field of dye manufacturing, have introduced new colour shades since 1953. Of particular interest on the stand were the colours for high-impact polystyrene comprising a range of 13 new colours.

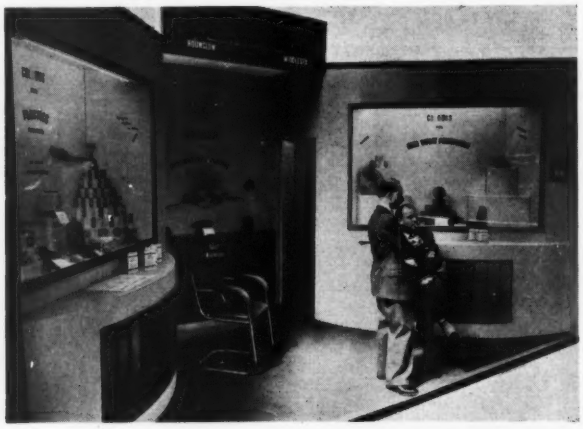
Williams (Hounslow) Ltd., Hounslow, Middlesex.

Papers for Plastics

OF special interest on the stand of The Wiggins Teape Group was a resin impregnated paper for use as a filter. An exhibit was shown of a typical industrial filter made from this material.

The Wiggins Teape Group, Mansell Street, London, E.1.

J. H. Vavasseur and Co., Ltd.



Williams (Hounslow) Ltd.

MOULDERS AND FABRICATORS

AS in the preview to the British Plastics Exhibition, published in the June issue of *Plastics*, the following review deals with exhibitors alphabetically. The object has been to take mouldings and fabrications of specific interest from the individual stands and to illustrate these, where space permits, with photographs. This section also contains photographs of the stands of the exhibitors and helps therefore to give a pictorial impression of the Exhibition, insofar as moulders and fabricators are concerned, as it appeared to the visitor.

As will be seen from the illustrations and the descriptions, this year's Exhibition set a very high standard of technical efficiency. In the majority of cases the emphasis was upon industrial mouldings and considerable use has been made of the latest types of plastics materials.

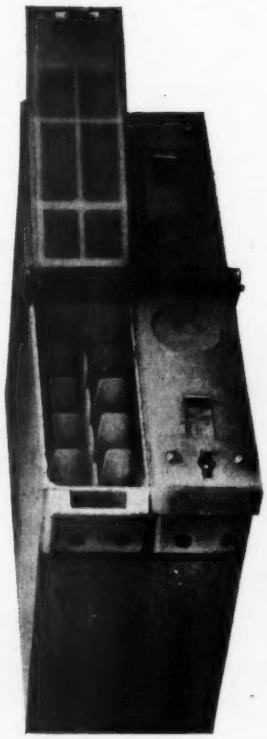
In the moulding and fabricating section, the quality of stand design was equal to, if not better than, that of the Exhibition for 1953. Certainly great attention was paid to the accessibility of mouldings to the visitor so that they could be inspected easily.

For those who may be interested in making further inquiries about the individual items shown on these pages, the names and full addresses of the moulder and fabricator concerned appear at the bottom of each paragraph. It may also be helpful to such people to refer to the June preview in which will be found not only a summary of the exhibits that were shown on each stand, but also tabular information indicating the fabricating processes each company is equipped to carry out, together with detailed information as to the types of plastics materials they are accustomed to handling.

Detonator Box

THE use of plastics materials in mining and quarrying has been further extended by an application displayed on the stand of Ashdowns Ltd. The combined use of three plastics materials, nylon, polythene, and polyester/glass cloth laminate, has gone into the manufacture of a detonator carrying case. The walls and bottom are made from the laminate and the lids are injection moulded in nylon thus making a very robust case. The internal divisions are moulded from polythene, keyed through the base, and of such a design that the detonators can only be extracted singly. An important feature is the necessity for making the container tamper proof, which requires the internal fixing of the hinges and the locks.

Ashdowns Ltd., Knowsley Road, St. Helens, Lancs.



(Left) Mine detonator case by Ashdowns Ltd.

Polythene Bottles

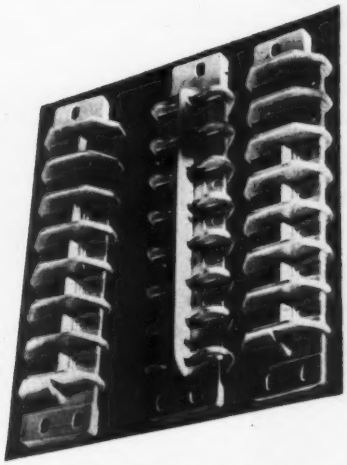
THE recent entry of Barclay-Stuart (Plastics) Ltd., into the polythene bottle field was indicated by some of the first bottles from their plant. Also on the stand were examples of the many methods of fabricating plastics which they employ.

Barclay-Stuart (Plastics) Ltd., 25-27 Brunswick Street, Luton, Bedfordshire.

Electrical Mouldings

METER cases, insulating bushes, and handles moulded from thermosetting materials illustrated the weight of experience which can be brought to bear by an old-established company (founded in 1872) in dissolving the problems attached to complex and specialized mouldings.

Barrett and Elers Ltd., Dace Road, Old Ford, London, E.4.

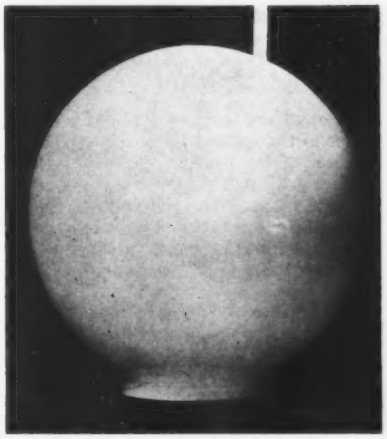


Melamine moulding by Birkbys.

Moulding in Melamine

A DIFFICULT moulding, carried out in mineral-filled melamine powder, for electrical purposes, was shown on the stand of Birkbys, Ltd., produced in their moulding shops.

Birkbys, Ltd., Liversedge, Yorkshire.



Belisha beacon by Cascelloid Ltd.

Pedestrian Crossing Beacon

ALTHOUGH several beacons were displayed on different stands at the exhibition, Cascelloid Ltd. were unique in displaying one moulded in polythene. The technique used for the manufacture of this beacon was similar to that used for the acid carboys, and large polythene containers also being displayed. The advantages of using polythene in this application are obvious.

Cascelloid Ltd., Abbey Lane, Leicester.

Roof Lighting

GLASS reinforced polyester corrugated sheeting was prominent on the stand of Cascelloid. Sold under the trade name Cascalite, the sheets are available in various colours.

Cascelloid Ltd., Abbey Lane, Leicester.

Vacuum-formed advertising plaque by Cellgrave Ltd.

Advertising Plaque

WELL known as engravers and printers of plastics materials, Cellgrave Co., Ltd., are now entering the field of vacuum forming. Among the many examples shown, both large and small, was a plaque for Robertson's. This was of particular interest in that

FABRICATORS

it showed the successful printing of sheet prior to the vacuum forming process. The register of the print to the form was of a particularly high standard and augurs well for the future. The printing was done by the silk-screen process on acetate sheet. Other examples, although hand painted were noticeable for their size and attention to detail.

Cellgrave Co., Ltd., Godman Road, London, S.E.15.

Extrusions for the Chemical Industry

NEWCOMERS to the industry and to this exhibition, Chemidus Plastics Ltd., showed a wide variety of pipes and solid rod extruded from the company's specially blended and compounded form of straight unplasticized p.v.c., Chemidus 2,000. The material, moulded by the company, is designed to give good mechanical and thermal properties, and excellent weldability coupled with outstanding chemical resistance.

The general grade of Chemidus 2,000 contains no plasticizer, filler or pigment and is slightly translucent. The company has published a collection of technical literature evaluating the mechanical and other properties of this material.

Chemidus Plastics Ltd., 89 Upper Thames Street, London, E.C.4.

Radio Cabinet Moulding

A FEATURE of the E. K. Cole stand was the injection moulded radio cabinet produced on a 48-oz. Watson-Stillman machine, the moulding weighing 42 oz. The finish obtained with this cabinet, in polystyrene, is most effective. B.I.P. Tools Ltd., manufactured the tool for this job, the tool working immediately it was put into service. Twenty-one mouldings per hour are produced. This cabinet for Murphy Radio Ltd., is believed to be the biggest injection moulded cabinet to be produced in the world.

E. K. Cole Ltd., Ekco Works, Southend, Essex.

Motor Car Application

ONE of the longest mouldings seen for some time was the capping rail and dashboard panel, moulded on a 1,500-ton press by E. K. Cole, in phenolic powder. The capping rail, which is 4 ft. long, called for considerable ingenuity in mould design.

E. K. Cole Ltd., Ekco Works, Southend, Essex.

Chemical Balance

ONE of the many mouldings shown by Crystalate Ltd., was the one illustrated here of the case for a chemical balance manufactured by William A. Webb Ltd. The case is compression moulded in urea in three parts, the balance arm case being a single moulding.

Crystalate Ltd., Mill Lane, Tonbridge, Kent.

Chemical balance case by Crystalate Ltd.

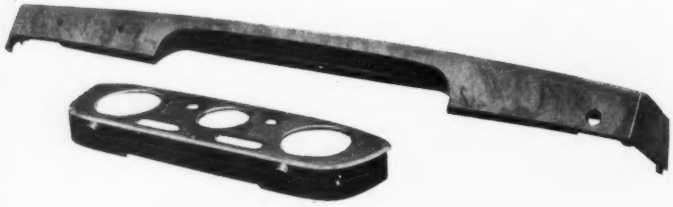
Pipette Washer

A NEW pipette washer which is constructed entirely of polythene was featured on this stand. It is virtually indestructible and eliminates the risk of damage to the pipettes which might arise using other material. The water enters through a small nozzle in the base, discharging through a wider bore syphon tube. The washing chamber fills in 2 to 4 minutes and empties in 1 minute, the action being continuous.

J. S. and F. Folkard Ltd., Rectory Lane, Edgware, Middlesex.

Sewage and Drainage Piping

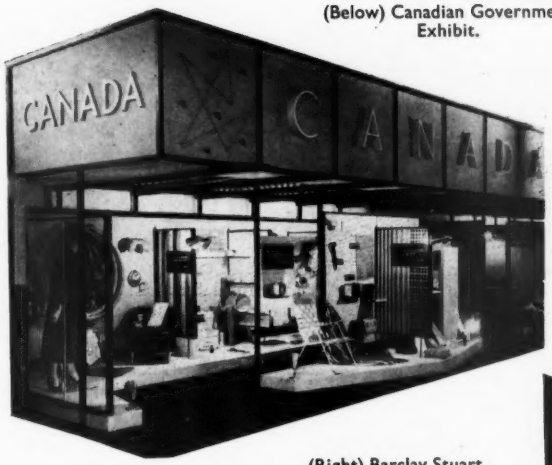
DESIGNED specifically for drains and sewage disposal, J. S. and F. Folkard Ltd., were showing a range of tubes and fittings in polythene. The bore sizes range from ½ in. to 4 in. Besides the piping, flanges, screwed couplers, bends and tees were also displayed and a special range of heavy-duty fittings have also been introduced. The use of this type of piping for drainage work has been extended considerably by the realization of its resistance to shock and the advantage of using it in countries which are prone to earth tremors. As an acid resisting pipe it will find many uses in the chemical industry and to further this a polythene waste trap has been added to the fittings. The photograph shows an inspection



(Above) Capping rail and resin board panel for a well-known car, compression moulded in phenolic materials by E. K. Cole Ltd.

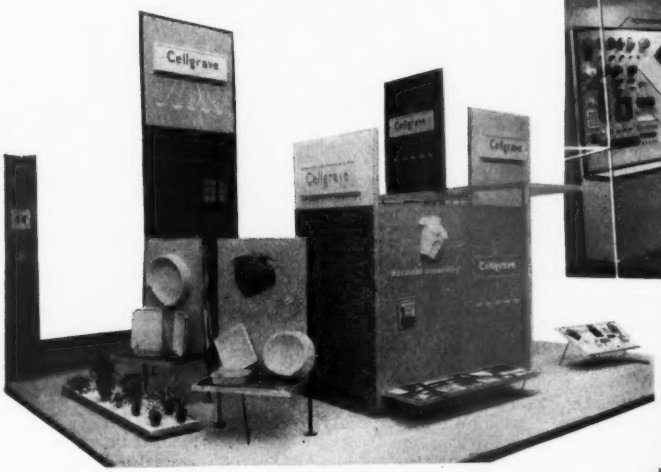
(Left) Injection moulded radio cabinet by E. K. Cole Ltd.

(Below) Canadian Government Exhibit.



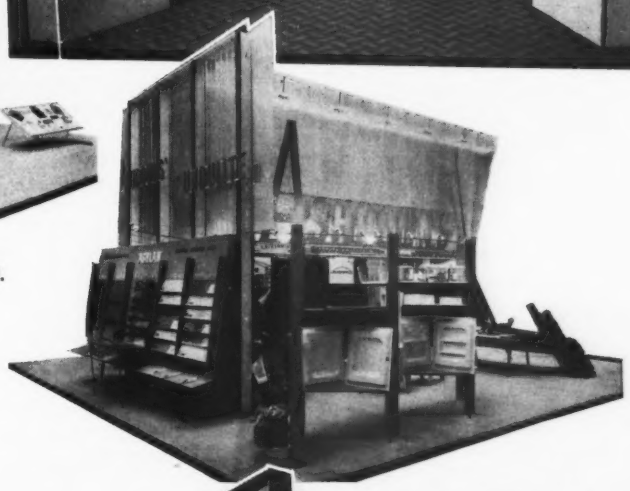
(Above) Barrett and Elers Ltd

(Right) Barclay Stuart (Plastics) Ltd.



(Above) Cellgrave Co. Ltd.

(Right) Ashdowns Ltd.



(Below) Birkbys Ltd.

(Below) Cascelloid, Division of the British Xylonite Co. Ltd.

Inspection chamber in polythene.

chamber fabricated from polythene, an integral part of the whole system.

J. S. and F. Folkard Ltd., Rectory Lane, Edgware, Middx.

Torch Body Moulding

NOW adopted by the Services, the Police, and forces of the North Atlantic Treaty Organization, the torch shown on the stand of the General Electric Co., Ltd., was of special interest to moulders. The body of the torch was injection moulded in cellulose acetate, designed to withstand heavy wear, the window injection moulded in transparent polystyrene, and the bulb holder in phenolic material. The components were all produced at the Witton Moulded Insulation Works and the torch was produced in the assembly shop which operates in conjunction with the moulding section.

FABRICATORS

General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

Display by Greenwich Plastics Ltd.

P.V.C. Sheeting

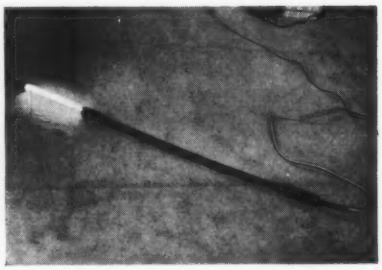
HER Royal Highness, The Princess Royal, was one of the many visitors attracted to the stand of Greenwich Plastics by virtue of the display of thermoplastic sheet materials. A noteworthy feature was the attractively printed material suitable for curtaining. Made-up specimens of sheet were also shown to demonstrate the application to fancy aprons, baby pants and protective overalls.

Greenwich Plastics Ltd., St. Mary Cray, Kent.

Inspection Light

SHOWN on the stand of Halex was an inspection light designed for illuminating the inside surfaces of tubes, drums and conduits. The light comes from a small fluorescent tube fitted inside a cellulose acetate tube, the electrical cable being led through the tube to the mains supply. By this means the light and connections are protected and also have a certain amount of resiliency. The overall diameter of "Barrelite" is 1¼ in. and it is manufactured by Worboys Electrical Co. Ltd., for V. Blagden and Co., Ltd.

Halex, Higham's Park, London, E.4.



Inspection light incorporating a Halex component.

Nylon Sunglasses

BESIDES examples of mouldings in Lustrac acetate powder, E. R. Holloway Ltd., had a comprehensive display of their combs, manicure sets and sunglasses. One of the latest innovations in the latter being a one-piece nylon frame, the folding of the side frame being accomplished by reducing the thickness of the nylon at the hinge point thus making it more flexible.

E. R. Holloway Ltd., Bessemer Road, Welwyn Garden City, Herts.

Viceroy Shaver

ONE of the articles shown on the stand of Injection Moulders to demonstrate the technical level of work carried out by the company was the component parts including body and head of the Viceroy electric shaver. The body is moulded in urea, the dust cover in high impact polystyrene, the headguard in general purpose polystyrene, and internal cams in nylon.

Injection Moulders Ltd., Westmoreland Road, London, N.W.9.

Vacuum Jugs and Alkyd Mouldings

BESIDES a large range of industrial mouldings, Insulators Ltd., displayed a range of vacuum jugs moulded for Isovac Ltd. The jugs are in two colours and materials, the base being in black phenolic material and the body in different pastel shades of urea. The design is particularly elegant, having smooth contours which do not lose sight of the articles' utilitarian value.

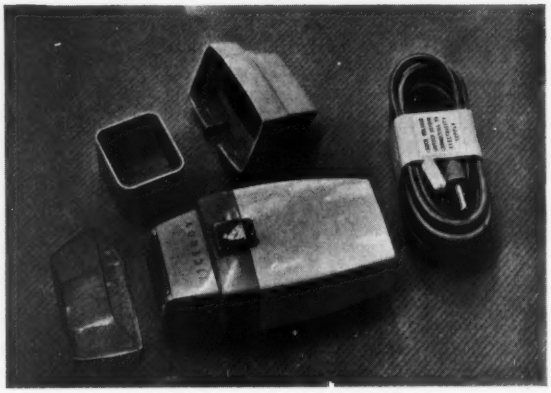
Urea and phenolic moulding powders are used by Insulators Ltd. in the manufacture of these vacuum jugs.

Also on show for the first time were alkyd mouldings for the electrical industry. Details of this relatively new material and the moulding technique appeared in the March issue of *Plastics*.

Insulators Ltd., Leopold Road, Edmonton, London, N.18.

P.V.C. Upholstery Cloths

IOCO LTD., showed for the first time a new range of vinyl-coated fabrics which have been developed in America and are a great success over there. The fabrics are marketed under the trade name Vicrtex (pronounced



Moulded components of the Viceroy Shaver, by Injection Moulders Ltd.

(Left) Chemidus Plastics, Ltd.

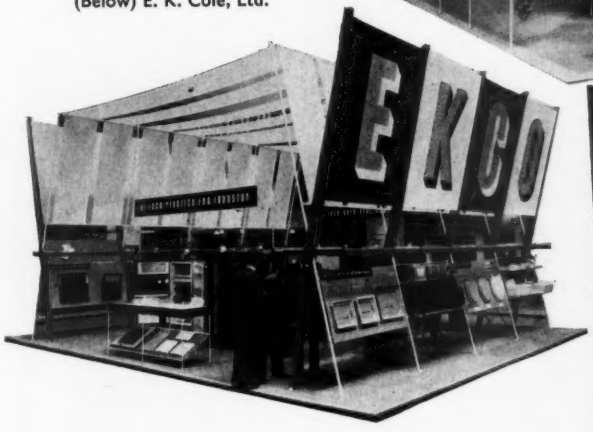
(Above) Crystalate, Ltd., Ebonestos Industries, Ltd and Mica Products, Ltd.

(Below) Halex Division of the British Xylonite Co., Ltd.

(Above) G.E.C., Ltd.

(Right) Greenwich Plastics, Ltd.

(Below) E. K. Cole, Ltd.

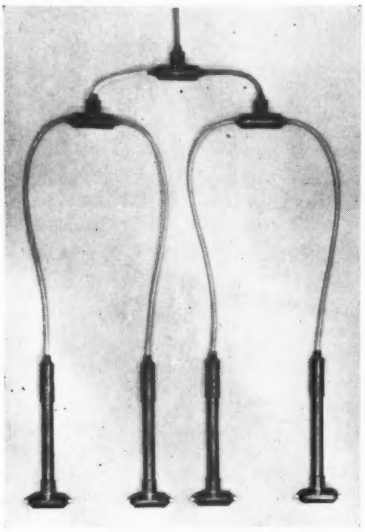


(Below) J. S. and F. Folkard, Ltd.

H

vic-ar-tex) and are produced in a range of colours, designs and weights to suit varying applications. The backing cloth is either cotton or linen, and the bold embossed surface designs add greatly to the attractive appearance of the material.

Ioco Ltd., Anniesland, Glasgow, W.3.



Wireless equipment for Malaya.

Injection Moulded Polythene Connectors

A PROMINENT exhibit on the stand of Kent Mouldings was an aerial harness for use in Malaya and supplied to Marconi Wireless Telegraph Co., Ltd., which employed injection moulded polythene covers. Polythene gives excellent resistance to tropical conditions.

Kent Mouldings, Footscray, Sidcup, Kent.

FABRICATORS

Telephone index by J. F. Kenure Ltd.

Plastics Miscellany

A WIDE variety of mouldings in thermoplastic materials, including toys, household goods and office equipment, illustrated the range of applications for which plastics are being used.

J. F. Kenure Ltd., Faggs Road, Feltham, Middlesex.

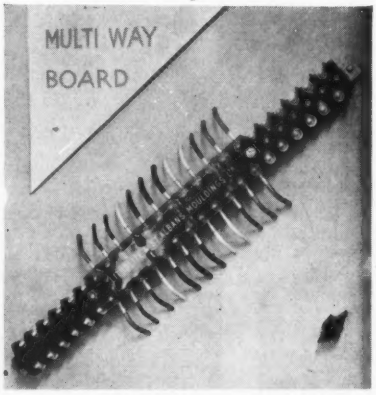
Polythene Oil Cans

OIL cans, blow-moulded in polythene, were included in the display of bottles shown by Lacrinoid Products Ltd. Other items included a miner's drinking bottle, insecticide injectors, glue-pen refills and hair lacquer

Display by Lacrinoid Products Ltd.

bottles giving some idea of the different industries which are using polythene bottles. Nylon bottles were also shown.

Lacrinoid Products Ltd., Gidea Park, Essex.

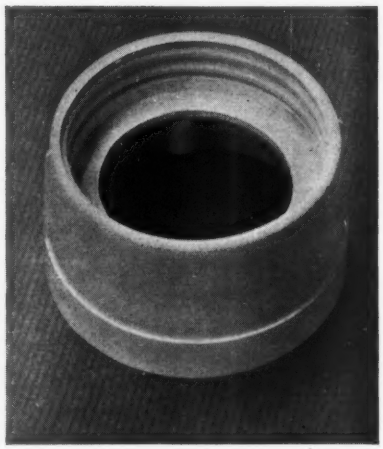


Terminal Keepers by Litholite Insulators and St. Albans Mouldings Ltd.

Terminal Keepers

ONE of the first mouldings produced by Litholite Insulators and St. Albans Mouldings Ltd., was a terminal keeper for the electrical industry. It was moulded in a single compression mould from phenolic material and was regarded as a nice "steady" job. Today, many years later, the demand has increased and multi-cavity tools are in use every day, producing a moulding the quantities of which must now run into many hundreds of thousands.

Litholite Insulators and St. Albans Mouldings Ltd., Sandown Road, Watford, Herts.



Goblet base injection moulded by London Moulders (Plastics) Ltd.

Goblet Base

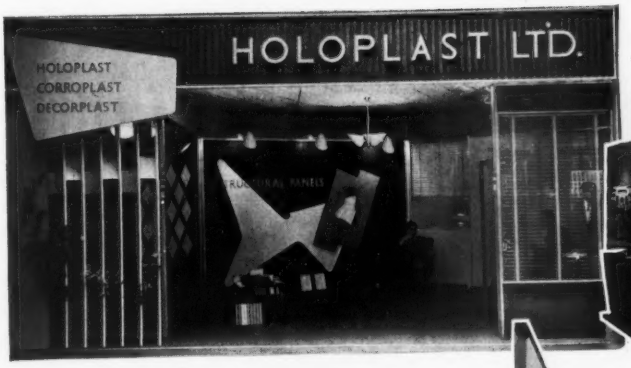
MOULDED in cream-coloured, high-impact polystyrene, the goblet base for the Kenwood mixer was one of the many examples of the use of plastics in the kitchen as exhibited by London Moulders (Plastics) Ltd.

London Moulders (Plastics) Ltd., 364 Buckingham Avenue, Trading Estate, Slough, Bucks.

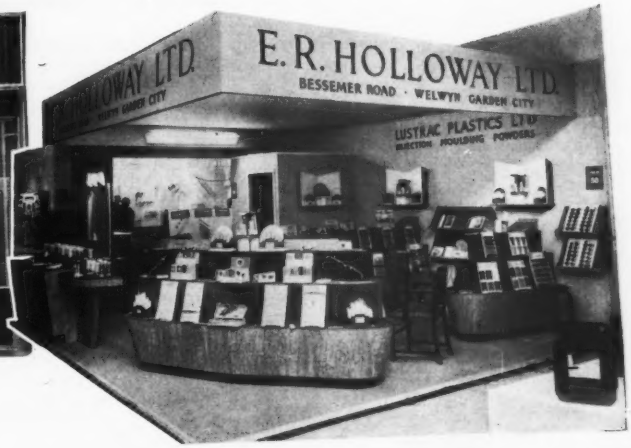
Reinforced plastics radome.

Aircraft Parts

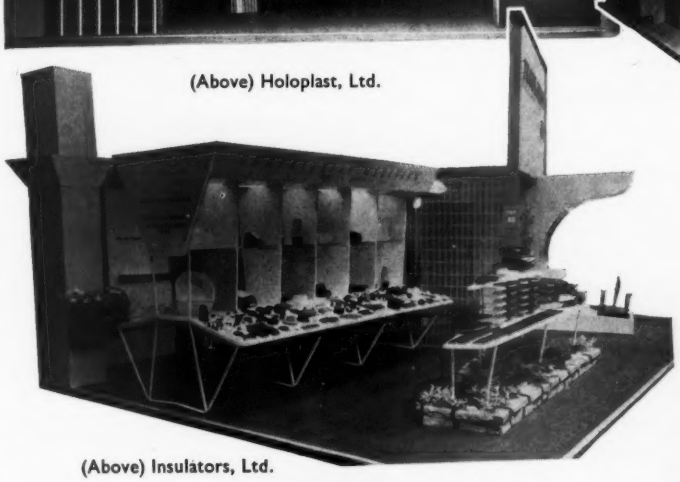
GLASS fibre laminated with polyester resin and moulded under low pressures is now used in many modern aircraft. Examples



(Above) Holoplast, Ltd.



(Above) E. R. Holloway, Ltd.



(Above) Insulators, Ltd.

(Right) Kent Mouldings.

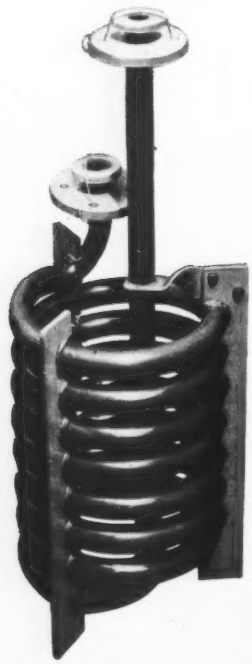
(Left) Injection Moulders, Ltd.

(Above) J. F. Kenure, Ltd.

(Left) Ioco, Ltd.

of radomes using a laminate sandwich construction were exhibited by Marston Excelsior Ltd., who are specialists in this type of work. Also on show was the nose of a supersonic aircraft manufactured from the same material.

Marston Excelsior Ltd., Wobaston Road, Fordhouses, Wolverhampton.



Cooling unit by Horwitch Smith.

Cooling Unit

DESIGNED and assembled by Horwitch Smith Ltd., the cooling unit has been constructed from extruded tubing manufactured by Melwood Thermoplastics Ltd.

Melwood Thermoplastics Ltd., High Street, Harpenden, Herts.

FABRICATORS

Honeycomb Structures

HONEYCOMB structures formed from glass fabric and polyester resin and also from cotton fabric and phenolic resin formed

Reinforced plastics moulding by Microcell Ltd.

part of the display of structural laminates for the packaging and aircraft industries, exhibited by Microcell Ltd. The lightness and strength of these materials have made them suitable for many specialized applications in aircraft.

Microcell Ltd., 56 Kingsway, London, W.C.2.

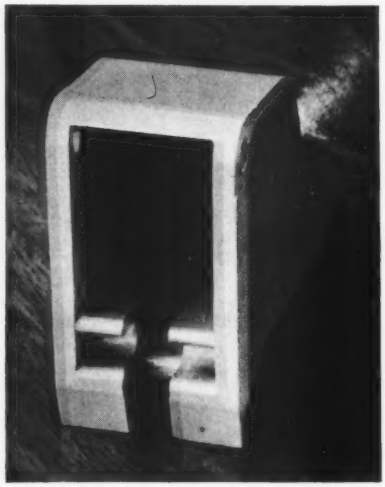
Void-free Laminates

GLASS-CLOTH polyester resin laminates which are guaranteed void- and bubble-free were shown for the first time by Microcell Ltd. This is a big step forward in the manufacture of these laminates and will mean a standardization of physical properties of sheets and forms.

Microcell Ltd., 56 Kingsway, London, W.C.2.

Polystyrene Refrigerator Application

INJECTION moulded in polystyrene, the refrigerator door cap shown below was produced by Mica Products Ltd. The



Polystyrene moulding by Mica Products Ltd.

moulding section is a complex shape and considerable ingenuity was called for in the production of this unit.

Mica Products Ltd., Mill Lane, Tonbridge, Kent.

Fabrications in Polythene

AS usual, a very high standard was set by the articles shown on the stand of Rediweld Ltd., principally in the field of polythene and p.v.c. sheet fabrication.

Rediweld Ltd., 15-17 Crompton Way, Crawley, Sussex.

Refrigerator Component

INJECTION moulded in styrene on a 16-oz. machine, National Plastics (Sales) Ltd., showed a very attractive refrigerator component produced for Nash Kelvinator Ltd. The unit is moulded in transparent styrene and is spray painted on the back.

National Plastics (Sales) Ltd., Westmoreland Road, London, N.W.9.

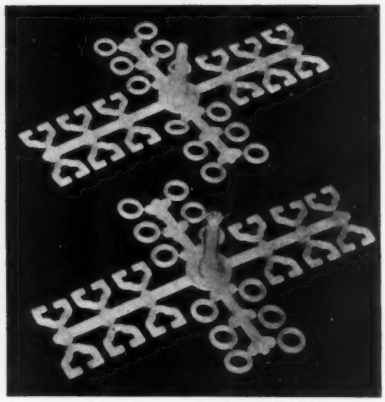
P.V.C. Flooring

THE Phoenix Rubber Co. Ltd., displayed a colourful selection of p.v.c. floor, and wall tiles, designed for hard wearing and for the retention of the surface finish over an extended period.

Phoenix Rubber Co. Ltd., 2K Buckingham Avenue, Trading Estate, Slough, Bucks.

Curtain Fittings

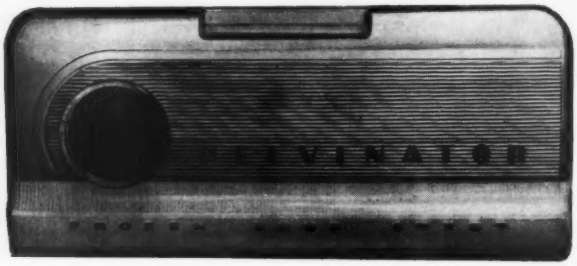
MOULDED in nylon, Punfield and Barstow (Mouldings) Ltd., showed a range of



Curtain fittings in nylon by Punfield and Barstow (Mouldings) Ltd.

rings and slides for curtain fittings, produced on a Windsor 2-oz. machine, 12 cavities in each shot. This new application for nylon is now being widely extended through the hardware stores and we understand that large orders are outstanding for them.

Punfield and Barstow (Mouldings) Ltd., Westmoreland Road, London, N.W.9.



Refrigerator moulding by National Plastics (Sales) Ltd.

(Above) Litholite Insulators and St. Albans Mouldings, Ltd.

(Above) Melwood Thermoplastics, Ltd.

(Left) Microcell, Ltd.

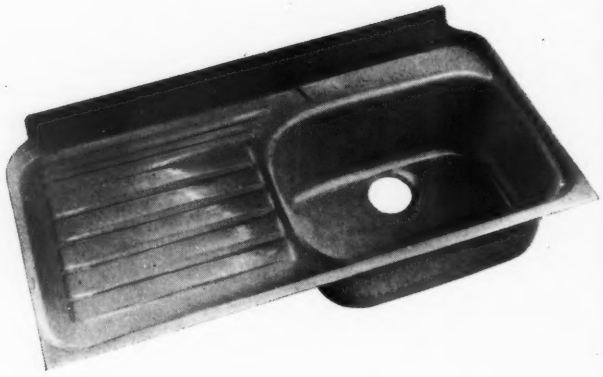
(Above) National Plastics (Sales), Ltd.

(Left) Lacrinoid Products, Ltd.

(Above) London Moulders (Plastics), Ltd.

(Left) Marston Excelsior, Ltd.

This column surmounted the Rosedale stand and showed many examples of the company's products.



Sink unit moulded in glass-reinforced polyester materials by Thermo-Plastics, Ltd., of Dunstable.

Injection Mouldings

INJECTION mouldings in many materials the theme of Storey Bros. and Co., Ltd. from which they were moulded, were displayed by Rosedale Associated Manufacturers Ltd.

Rosedale Associated Manufacturers Ltd., 11 Upper Grosvenor Street, London, W.1.

Printed Vinyl Sheet

THE use of vinyl sheet in the home was the theme of Storey Bros. and Co., Ltd. Printed in both contemporary and traditional designs the use of this sheeting was exemplified by a garden swing seat and canopy.

Storey Bros. and Co., Ltd., 104A Park Street, Grosvenor Square, London, W.1.

FABRICATORS

"Teasmade" Mouldings

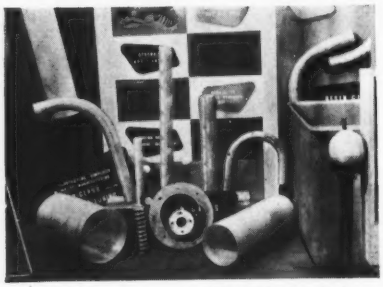
BEETLE urea moulding powder has been used in the manufacture of compression mouldings, shown opposite, forming part of the "Teasmade" unit which makes your early morning tea. Manufactured for the British Vacuum Engineering Co., Ltd., these mouldings were shown on the stand of Streetly.

Streetly Manufacturing Co., Ltd., Streetly Works, Sutton Coldfield.

Tubes

ENTERING the British Plastics Exhibition for the first time, T. I. Plastics Ltd., showed a very wide range of tubes fabricated from polythene, p.v.c. and resin/glass-fibre reinforced materials. The diversity of sizes and materials used demonstrated to the visitor the impact of plastics materials upon the tube manufacturing industry. Creating special interest were the resin/glass-fibre laminated tubes with tensile strengths up to 75,000 p.s.i. Of special importance is the weight-saving factor involved, these tubes having a specific gravity of 1.8, as compared with 7.7 for steel, and 11.37 for lead.

T. I. Plastics Ltd., Creda Works, Blythe Bridge, Stoke-on-Trent.



Tubes on the stand of T.I. Plastics Ltd.

Moulded components by Streetly.

Polythene

A PARTICULARLY important exhibit was the polythene coated paper shown by Telcon and now being produced at the Green Street Green works of the company by the plant recently installed. The coating is effected with the aid of an extrusion machine and a special die head and the resulting laminate has special properties particularly valuable in, for example, the packaging field.

Telegraph Construction and Maintenance Co., Ltd., Christchurch Way, London, S.E.10.

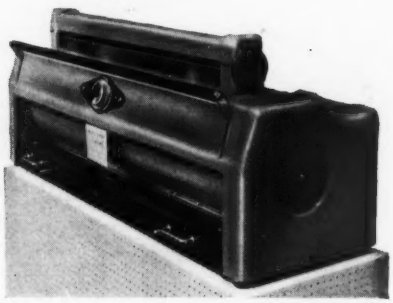
Glass Fibre Sink Unit

SHORTLY to go into production, it is anticipated, is a glass fibre reinforced polyester sink unit similar in design to the company's well-known range of Perspex sinks. Self coloured in cream, the finish was excellent and the unit attracted considerable attention both from home and overseas visitors.

Thermo-Plastics Ltd., Luton Road Works, Dunstable, Beds.

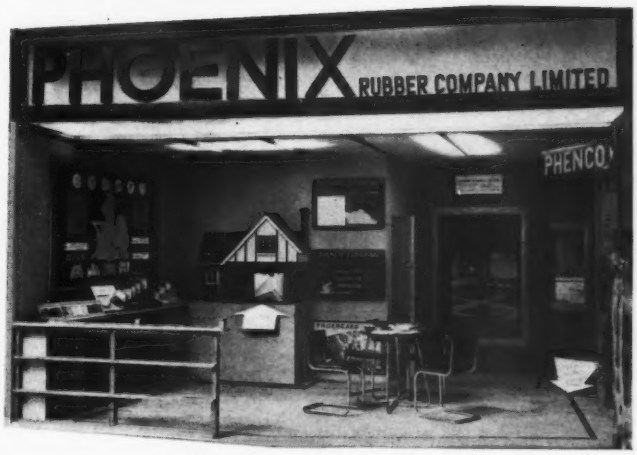
Office Machine Cover

FABRICATED in Perspex was the cover unit, some 2½ ft. wide, of a blueprinting machine. This demonstrated very well the progress made by Thermo-Plastics in the working and moulding of sheet Perspex and both the design and the finish were of a very high order.



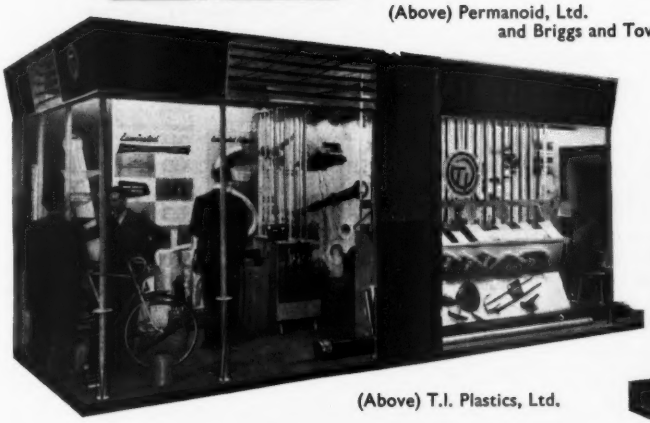
Perspex moulding by Thermo-Plastics Ltd.

Thermo-Plastics Ltd., Luton Road Works, Dunstable, Beds.



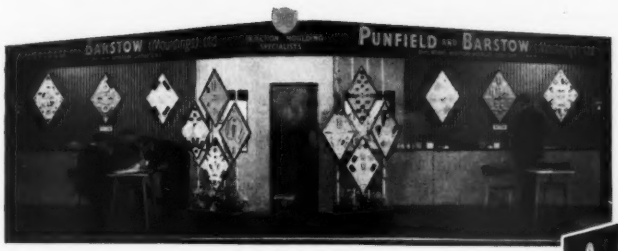
(Above) Permanoid, Ltd. and Briggs and Townsend, Ltd.

(Above) Phoenix Rubber Co., Ltd.



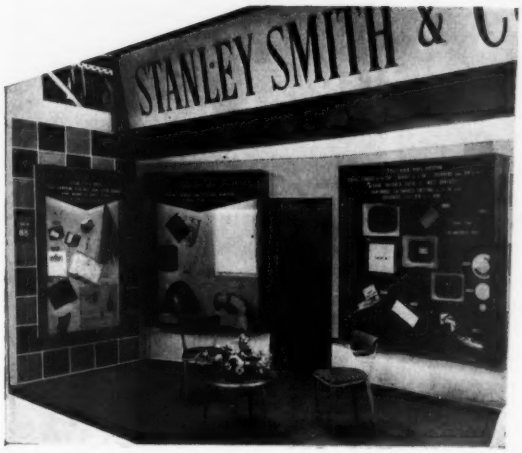
(Above) T.I. Plastics, Ltd.

(Above) The Streetly Manufacturing Co., Ltd.

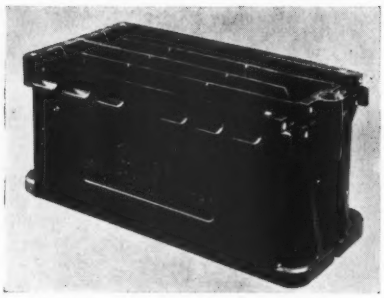


(Left) Punfield and Barstow (Mouldings), Ltd.

(Above) Storey Bros. and Co., Ltd.



(Left) Stanley Smith and Co., Ltd.



Aircraft battery box moulded in polythene by United Ebonite and Lorival Ltd.

Aircraft Battery Box

A LARGE number of complex mouldings in thermoplastic and thermosetting materials were featured on the stand of United Ebonite and Lorival Ltd. Among these was an aircraft battery box moulded in polythene.

United Ebonite and Lorival Ltd., Little Lever, Near Bolton, Lancs.

Bicycle Pump

ATTRACTING considerable attention on the stand of Universal Metal Products Ltd., was the foot pump cleverly designed to be folded up into a small compact unit, the working parts of which were injection moulded in polystyrene. For the shaft, which has to withstand considerable torsional loads, nylon has been used.

The connector, which is fitted with an adaptor to suit both cycle and motorcycle valves, has a swivel joint and when not in use is housed in a recess in the base.

The wire clip, which is electro-galvanized to resist rusting, serves a triple purpose in that it is used to keep the piston rod depressed for carrying purposes, it acts as a stand to keep the pump in an upright position when being operated by foot, and is also used to retain the connector in the base.

The cup washer is made of special oil-resisting rubber and the spring is made from high tensile steel.

(Right) Bicycle pump, designed to be either foot or hand operated, made by Universal Metal Products Ltd.

The complete unit is very light and compact, weighing only 5 oz. and having an overall height, when closed, of 4½ in., which means that it can be accommodated in a saddle bag or even a coat pocket without difficulty. Patent applications are pending in England and many countries overseas.

Universal Metal Products Ltd., Pendleton, Salford, 6, Lancs.

Coloured Glass Fibre Trays

ARRIVING just in time for the exhibition was a range of trays moulded in polyester resin reinforced with glass fibre. The fibre itself had been dyed in various colours, giving a very attractive moulding which caught the attention of many of the visitors.

Universal Metal Products Ltd., Pendleton, Salford, 6, Lancs.

Decorative Laminates

AS the popularity of these laminates grows so the variety of design and colour increases. The incorporation of original drawings and pictures into a laminate has also increased. Decorative laminates already attached to a plywood back have been specially designed for the home carpenter to fix in position.

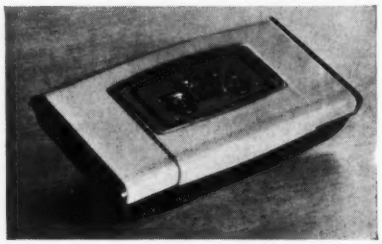
Warerite Ltd., Watton Road, Ware, Herts.

FABRICATORS

Three-Dimensional Badges

ONE of the leaders in this field of three-dimensional badge manufacture for motor car manufacturers, refrigerator companies, etc., is Wilmot Breeden. The company's stand at the exhibition was decorated with many examples and a particularly attractive feature was a cigarette box moulded in Perspex, incorporating on the lid a three-dimensional design. The finish in all aspects of this moulding were of an extremely high order.

The badges distributed to the Press, exhibitors, and home and overseas visitors were moulded and very kindly supplied by Wilmot Breeden and were carried out in the company's 3-D style.



Cigarette box with three-dimensional emblem, by Wilmot Breeden Ltd.

Wilmot Breeden Ltd., Amington Road, Birmingham, 25.

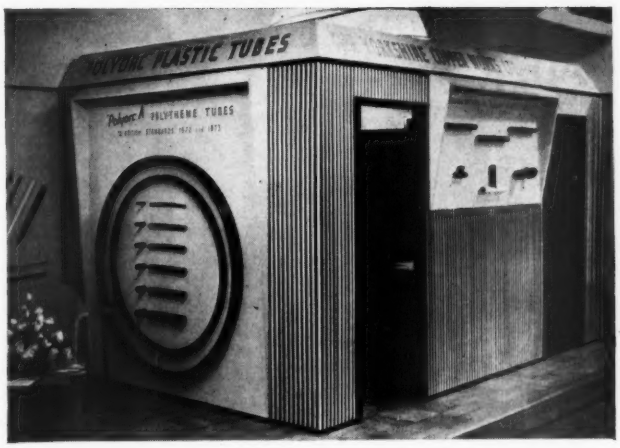
Plastics Tubes

PLASTICS tubes in polythene, rigid p.v.c. and high-impact polystyrene, with examples of the different methods of jointing, were displayed by The Yorkshire Copper Works Ltd.

The Yorkshire Copper Works Ltd., Leeds, Yorks.

Trays bonded with polyester resin and reinforced with coloured glass fibre.

(Above) View of some of the stands of moulders and fabricators, taken from the gallery of the National Hall.



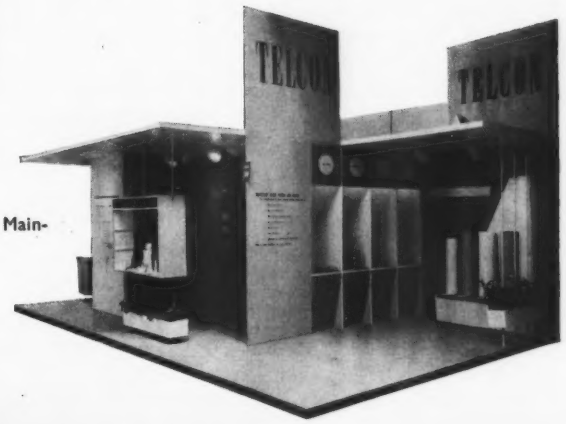
(Above) The Yorkshire Copper Works, Ltd.

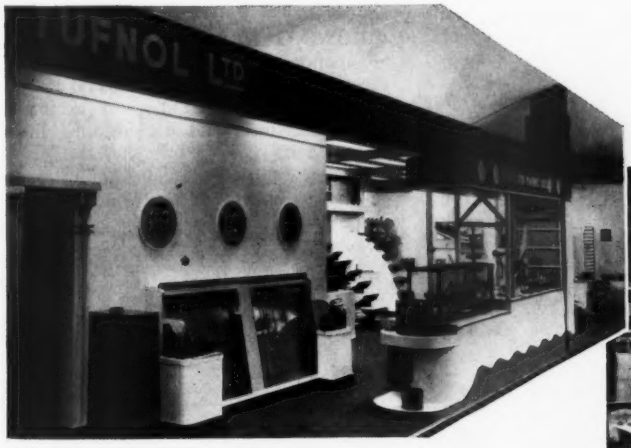
(Above) Thermo-Plastics, Ltd.

(Right) United Ebonite and Lorival Ltd.

(Above) Wilmot Breeden, Ltd.

(Right) Telegraph Construction and Maintenance Co., Ltd.





(Above) Tufnol, Ltd.

(Right) Universal Metal Products, Ltd.

MACHINERY

THE machinery section of an exhibition of this sort is often a good guide to the progress made within the industry as a whole and to the course which future developments are likely to take. The 1955 Exhibition of the plastics industry of Great Britain was no exception and from the ensuing description of some of the outstanding developments which were being shown the reader will appreciate the advances which have been made in machine design and efficiency, so essential to the establishment, progress and expansion of the plastics industry.

The emphasis on all fabricating machinery seems to have been to establish faster cycle times and, in keeping with the age we live in, full automation. Such advances have not been made at the sacrifice of other features and the control of machinery, whether it be of the heat, the pressure, or the running speed has never before been so fine or so accurate.

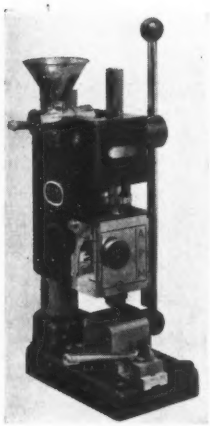
Apart from moulding presses, examples of the moulds themselves showed the high quality which is now a standard in this field of engineering. The vacuum forming technique in which interest has been aroused in the last few years has produced machines of varying sizes some of which were exhibited at the Exhibition. Extruder design has also advanced with the advent of new materials and those on show would cope with all thermoplastic materials with equal facility.

For the reader who desires further information on the machinery section of the exhibition a reference should be made to the June issue of *Plastics* where the supplement containing the exhibition preview gives a general description of most of the exhibits which were displayed.

Bench Injection Moulder

HAVING a maximum shot capacity of ¾ oz., the A.P.M. 21 hand-operated bench injection moulding machine is now being used for laboratory, educational, and industrial purposes. A specially valuable use for this unit is in colour proofing and experimental moulding. The injection pressure achieved is 5,700 p.s.i., and the temperature control range is from 0 to 300° C.

Asmidar Plastic Moulding Machines Ltd., 5 Rampayne Street, London, S.W.1.



The A.P.M. hand-operated bench injection moulding machine with shot capacity of ¾ oz.

Auto-control Presses

A RANGE of three auto-control presses for compression and transfer moulding covering pressures from 20 to 300 tons has been introduced by B.I.P. Engineering Ltd. These machines follow the traditional high level of engineering achievement shown by the company.

B.I.P. Engineering Ltd., Streetly Works, Sutton Coldfield.

Multi-punch Pelleting Machine

OF special interest on the stand of B.I.P. Engineering Ltd. was the Bipel 35-ton multi-punch horizontal hydraulic pelleting machine. The production rate with this unit is up to 2,500 pellets per hour. Special features of the machine include convenient placing of controls, equal pellet density and weight, absence of powder loss, absence of jamming of punches in the die, ease of cleaning and tool changing, versatility in dealing with difficult as well as easily pelleted materials, low power consumption, and self-contained drive from an individual pump.

As mentioned above, the maximum pressure is 35 tons, minimum being 5 tons. The diameter of the pellets can range from $\frac{3}{16}$ in. to ¾ in.

B.I.P. Engineering Ltd., Streetly Works, Sutton Coldfield.

Tools for the Plastics Industry

GIVEN pride of place on the stand of B.I.P. Tools Ltd., was a complex mould constructed for E. K. Cole Ltd., for the production of what is believed to be the largest injection-moulded radio cabinet in the world. Manufactured for Murphy Radio Ltd., the mouldings produced weigh approximately 42 oz., the tool being used in a 48-oz. Watson-Stillman machine.

B.I.P. Tools Ltd., 147 Tyburn Road, Erdington, Birmingham.

The Egan Extruder

ON show for the first time at the British Plastics Exhibition was the Egan extruder manufactured in Great Britain by Bone Brothers, Ltd. Designed to handle all types of plastics materials suitable for extrusion purposes, the machine is built in six standard screw diameter sizes ranging from 2 in. to 8 in. Modifications can be made in intermediate sizes and with specially long screws.

A feature of the machine is its robust construction and die heads were shown on the stand suitable for wire covering, lay-flat tubing, paper coating and the manufacture of flat film.

Bone Brothers Ltd., Manor Farm Road, Alperton, Wembley, Middlesex.

Compression and Transfer-moulding Press

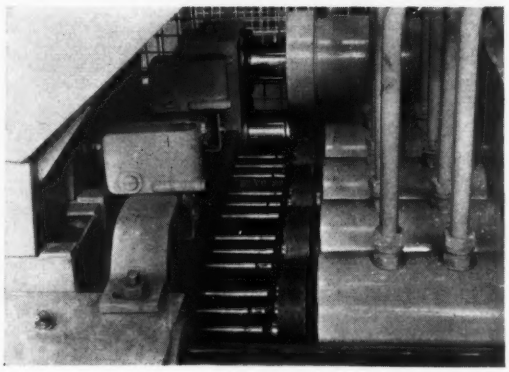
IMPROVEMENTS in the design and operating efficiency were the main features of the new 150-ton compression and transfer-moulding press shown by Bradley and Turton Ltd. This press is self contained and the actual working movements are fully automatic. It has been designed for high-speed operation with the latest fast-curing materials.

Bradley and Turton Ltd., Caldwell Works, Kidderminster.

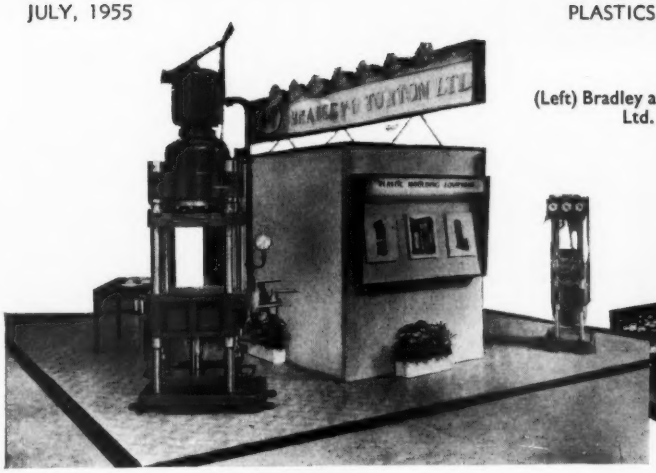
Couplings and Valves

SHOWING by photographs the many applications Ermeto couplings and valves have in the plastics industry, British Ermeto Corporation Ltd., also exhibited samples of them and demonstrated their efficiency.

British Ermeto Corporation Ltd., Beacon Works, Hargrave Road, Maidenhead, Berks.



A photograph showing the punches of the Bipel horizontal hydraulic pelleting machine.



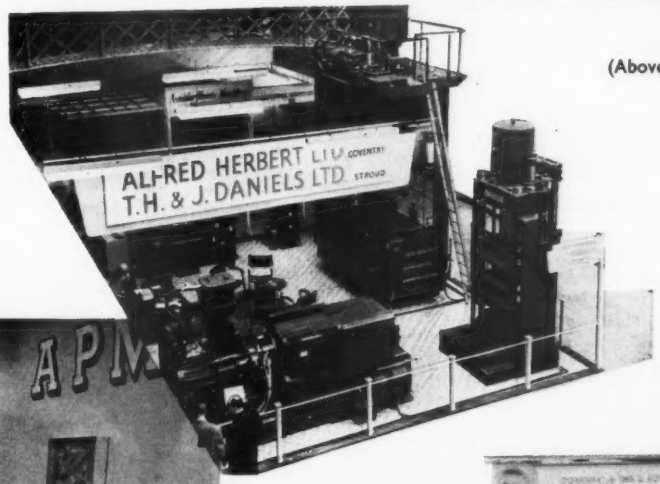
(Left) Bradley and Turton, Ltd.

(Above) Collinsons Precision Screw Co., Ltd.

(Above) B.I.P. Engineering, Ltd.

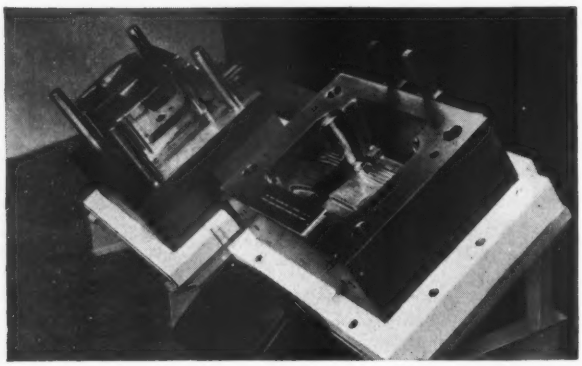
(Above) Bone Brothers, Ltd.

(Right) Alfred Herbert, Ltd., and T. H. and J. Daniels, Ltd.



(Below) Asmidar Plastic Moulding Machines, Ltd.

(Below) Dowding and Doll, Ltd.



The mould made by B.I.P. Tools Ltd. for what is believed to be the largest injection moulded radio cabinet in the world.

Metal Inserts

FORTY years' experience in the manufacture of repetition precision parts made from the bar in brass, steel and aluminium was shown in the variety of screws, nuts and inserts for the plastics industry displayed by Collinsons' Precision Screw Co. Ltd.

Collinsons' Precision Screw Co. Ltd., Forest Road, Walthamstow, London, E.17.

Low-pressure Moulding Press

ONE of the largest exhibits, if not the largest, was a 250-ton, low-pressure moulding press manufactured by T. H. and J. Daniels Ltd. This press, which has tables 8 ft. by 5 ft., has been produced for use in the moulding of glass-fibre reinforced laminates. A feature of this giant is the control of the closing speeds. A high-speed approach with a controlled final closing speed down to zero are provided. The machine has a maximum daylight of 7 ft. with a stroke of 4 ft.

T. H. and J. Daniels Ltd., Lightpill Iron Works, Stroud, Gloucester.

MACHINERY

Small-capacity Injection-moulding Machines

A HAND-OPERATED injection-moulding machine with a capacity of ¼ oz. and a power-operated machine with a capacity of ½ oz. were being demonstrated to potential buyers and interested spectators. These machines have been designed for the moulder who does not wish to take up large machine capacity or make multi-cavity tools for small articles and short runs.

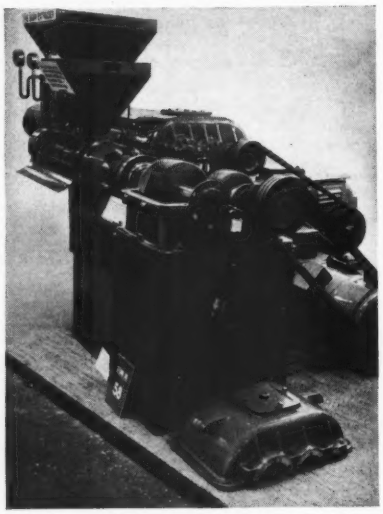
Operation of the hand machine is by lever and toggle action, which carries the moving platen along tie-bars. The mould is locked in the closed position by a hand lever in the bolster, while a further movement brings the cylinder nozzle to the sprue bush and actuates the plunger. The cylinder is heated by external band heating elements and is fitted with a temperature control unit. Cooling of the plunger and charging end of the cylinder is by water.

In the power-operated machine the mould is closed and locked by lever and toggle action and injection is performed hydraulically, the power coming from a Vickers-Detroit hydraulic pump.

Dowding and Doll Ltd., 346 Kensington High Street, London, W.14.

Automatic Injection Moulding

THE Series II injection-moulding machine has a new and patented design for the injection cylinder to give faster cycling times. This design incorporates a prefilling device whereby on the injection stroke the prefilling ring draws back allowing the next charge to enter the cylinder. The withdrawal of the injection plunger coincides with the forward movement of the ring and plasticizing of the next charge. The cylinder is heated by three external band-type heaters.



A view of the Egan Extruders on the stand of Bone Bros. Ltd.

The maximum recommended moulding capacity for cellulose acetate is 30 grammes with an approximate plasticizing capacity of 20 lb. per hour. One of the machines on show was producing a 12-cavity shot, weighing 7 grammes at over 800 cycles per hour.

Dowding and Doll Ltd., 346 Kensington High Street, London, W.14.

Vacuum-forming Machine

W. EDWARDS AND CO. (LONDON), LTD., were demonstrating the Hydro Chemie Ltd. vacuum-forming machinery which they manufacture under licence. This machine, the model 2G5, is a twin-table automatic machine with a moulding area of 40 in. by 60 in., the maximum depth of draw being 22 in. Examples of vacuum forming were also on show and included a fine relief map and several advertising plaques all printed in several colours.

A vacuum-coating unit was also exhibited, designed for the deposition of zinc on paper or nylon rolls up to 6-in. spool diameter and 5-in. reel width.

W. Edwards and Co. (London) Ltd., Manor Royal, Crawley, Sussex.

Six-unit Moulding Press

THE most recent addition to the range of Lancastrian presses is the six-unit press. These 10-ton moulding presses have been designed for use with the fast-curing alkyds and phenolics and each unit has its own automatic time cycle and controls.

The battery is self-contained and is powered by a Towler axial-plunger pump working in conjunction with two Greer accumulators. The presses are up-stroking with pressures of between 1½ and 10 tons on an 8-in. stroke. The daylight is adjustable between 16½ in. and 22 in. and the plate area is 12 in. by 18 in. During the exhibition these presses were moulding alkyd material.

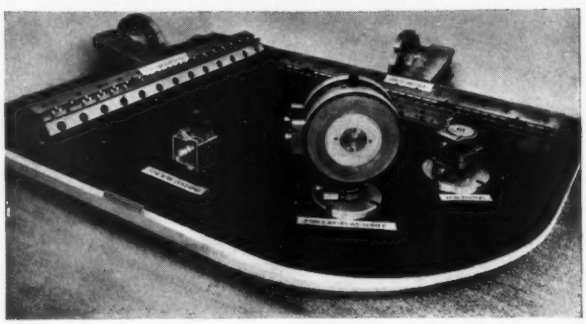
Other exhibits were mixing machines, a multi-daylight veneer press, a 150-40-ton compression and transfer press and a model of a Lancashire boiler.

Foster Yates and Thom Ltd., Blackburn, Lancs.

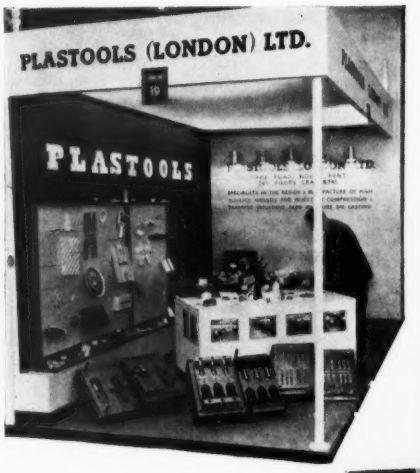
Infra-red and High-frequency Heating

A SECTION of the G.E.C. stand was devoted to the use of infra-red and high-frequency heating in the plastics industry. Equipment shown included an infra-red oven for the softening of thermoplastic sheet materials and a heating panel, 3 ft. by 6 ft. for the gelling of p.v.c. pastes and similar processes. For the pre-heating of thermosetting materials there was a 2kW. high-frequency generator as well as the standard bench-type oven.

General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2.



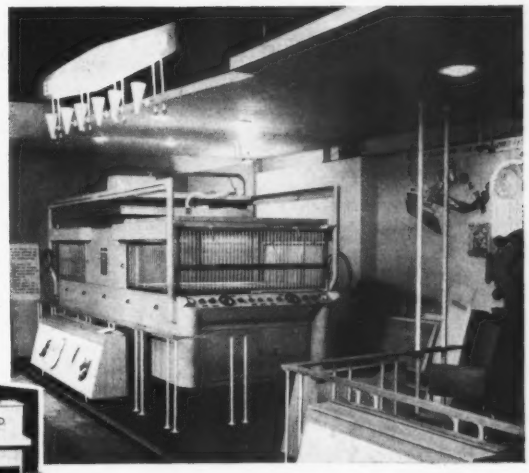
A selection of extruder die heads for tube, wire covering, sheet and paper coating, production.

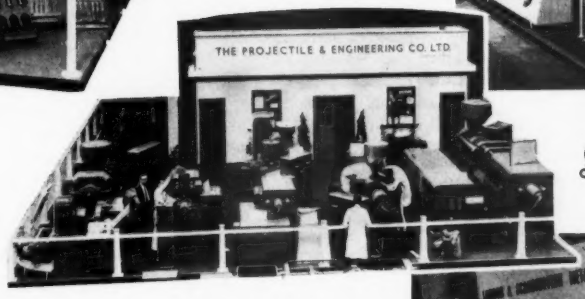


(Left) Plastools (London), Ltd.

(Right) W. Edwards and Co. (London), Ltd.

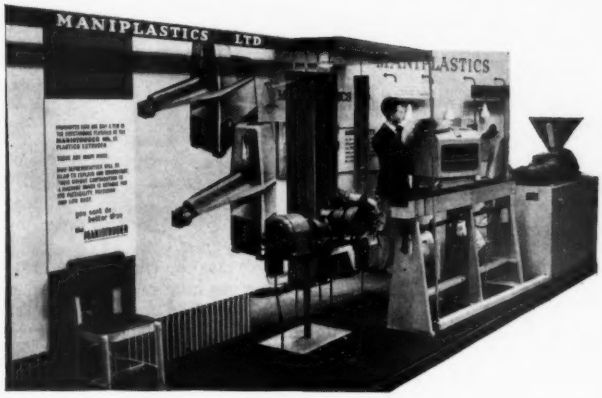
(Below) Projectile and Engineering Co., Ltd.





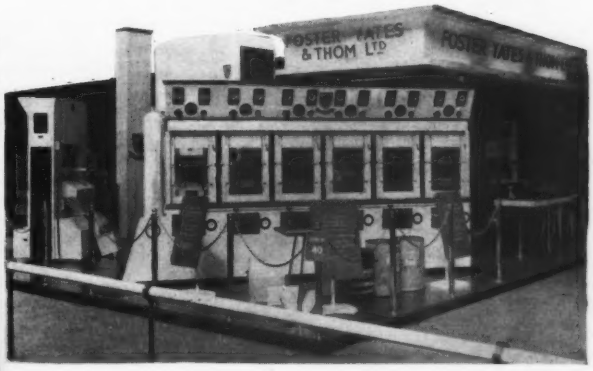
(Below) London and Scandinavian Metallurgical Co., Ltd.

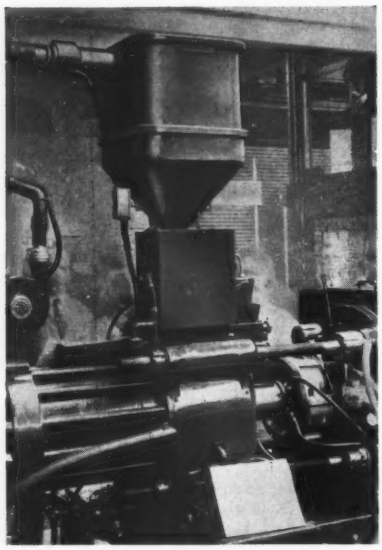
(Below) Maniplastics, Ltd.



(Below) Granbull Tool Co., Ltd.

(Below) Foster, Yates and Thom, Ltd.





The powder-drying and weigh-feed attachment on the Herbert/Reed-Prentice machine.

Blow-moulding Equipment

ATTRACTING a good deal of interest was the equipment manufactured by The Granbull Tool Co., Ltd., for the production of bottles by the injection moulding process. A preform is injection moulded into a parison mould, the moulding being formed round the blowing stick. From here the moulding and stick are transferred to the blowing fixture which contains the mould of the bottle, and blown out to the required shape. The mould on show was

MACHINERY

designed for a standard 3-oz. injection moulding machine. Examples of bottles produced by this technique and the different shapes possible were also displayed.

The Granbull Tool Co., Ltd., also produce standard injection and compression moulds for the plastics industry.

The Granbull Tool Co., Ltd., 39 High Street, Kingston upon Thames, Surrey.

Induction Heating for Moulding Machines

INTRODUCED for the first time at the Exhibition was low-voltage induction heating for the injection cylinder of the Herbert/Reed-Prentice 10D 8-14-oz. automatic injection moulding machine. This machine, which enjoys great popularity with moulders, was shown with several new features besides the induction heating, these include automatic weigh-feed for the moulding powder, accurate to a half of 1% of the weight required, and a powder-drying attachment operated by blowing warm air into the feed hopper. Demonstrations of moulding a refrigerator part weighing 9 oz. using a single-shot process were being carried out during the exhibition. Up to 14 oz. mouldings can be produced on this machine using the double-shot process.

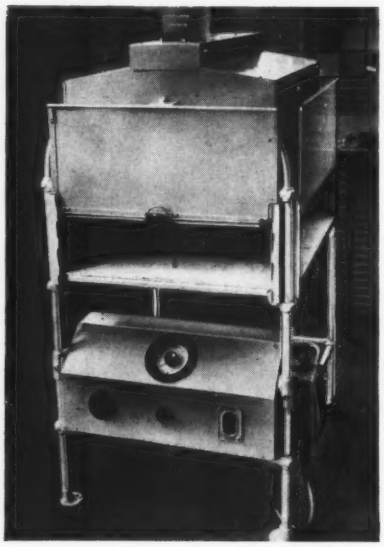
Also incorporating the double-shot mechanism was the 400T 16-22-oz. machine. Plasticizing capacity of this machine is up to 125 lb. per hour, depending on mould design and material.

The Edgwich H.Y. fully automatic machine was kept running continually without attention throughout the exhibition to demonstrate its reliability. This machine, with a plasticizing capacity of 18 lb. per hour and maximum shot of 1½ oz., has a mould locking pressure of 35 tons and a total injection pressure of 28,500 lb. It is also fitted with an adjustable self-compensating powder-feed device operated by the plunger.

Alfred Herbert, Ltd., Coventry, Warws.

Electro-formed Mould Dies

EXAMPLES of moulds formed by the electro-deposition of low-carbon, nickel-cobalt alloy on plastics patterns were shown by the London and Scandinavian Metallurgical Co., Ltd. Examples included shells for slush moulding of p.v.c., moulds for artificial teeth, nylon components and other



Infra-red heating oven shown by G.E.C. Ltd.

plastic parts, and exhibits where the process has been used to obtain texture finishes.

London and Scandinavian Metallurgical Co., Ltd., Chelton Works, Gonsalva Road, London, S.W.8.

Low-cost Extruder Development

SINCE its introduction over a year ago, the Manistruder has undergone considerable revision both in internal design and styling, and the Mark II machine, shown on the company's stand at the Exhibition, created considerable interest. The chief feature of this machine lies in the all-welded frame structure and the employment in its construction of standard parts such as a 10 h.p. Brooks electric motor and a Ford 5-ton Diesel gearbox. The object is to make available a machine, the spare parts for which can be readily obtained at short notice.

Maniplastics, Ltd., Hare Street, Woolwich, London, S.E.18.

In-line Pre-plasticizing Unit

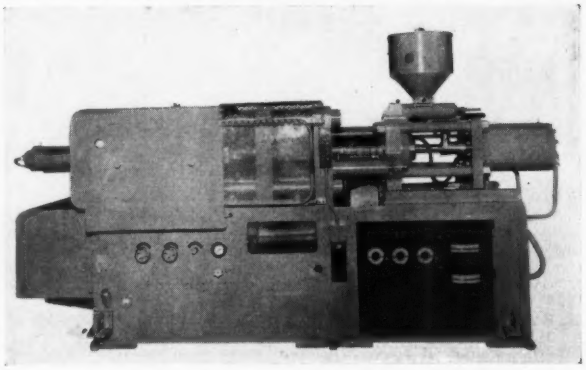
THE Projectile and Engineering Co.'s stand exhibited a representative section of the company's range of injection moulding machines, plastic extruders and take-off gear. The already well-known 4½/6-oz. and 8/12-oz. injection moulding machines were fitted with equipment for fully automatic operation and with a number of other improvements. The 2½-in. extruder was also equipped with a number of improvements over the model exhibited previously. In addition to these, there were three new machines which were exhibited for the first time, one of which was the new fully automatic model 20M machine with a shot capacity of up to 2½ oz. in polystyrene.

This machine ran continuously during the Exhibition producing a key tag, on a four-impression mould. The production rate throughout the period of the Exhibition averaged an 8-sec. cycle, i.e., 450 shots per hour.

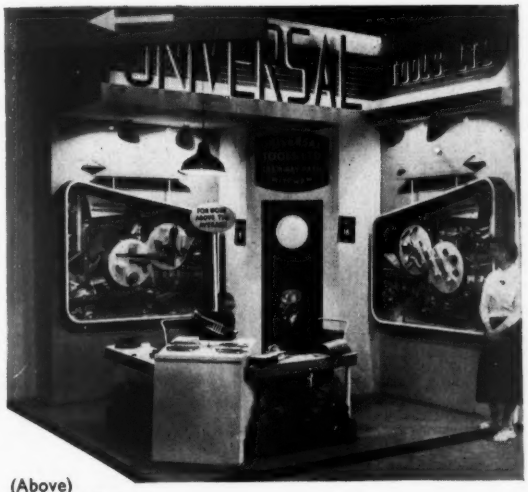
Another interesting development was the Peco "In-line" pre-plasticizer. It comprises a long heating chamber which is fed through a normal hopper feed by a plunger operating at a maximum pressure of 10,000 lb./sq. in.

In order to increase the efficiency of heating, the chamber has been made longer than usual, the difficulty of controlling pressures being non-existent as the plunger pumps the material into an auxiliary chamber.

The nozzle in the heating chamber is designed as a plunger. The material is squirted through the centre hole of the nozzle into the injection transfer pot, which is co-axial with the heating chamber and is fixed to a hydraulically operated crosshead. Injection into the cavity takes place with the whole heating chamber acting as a plunger and moving forward against the stationary injection transfer pot. After the necessary holding-on period a further

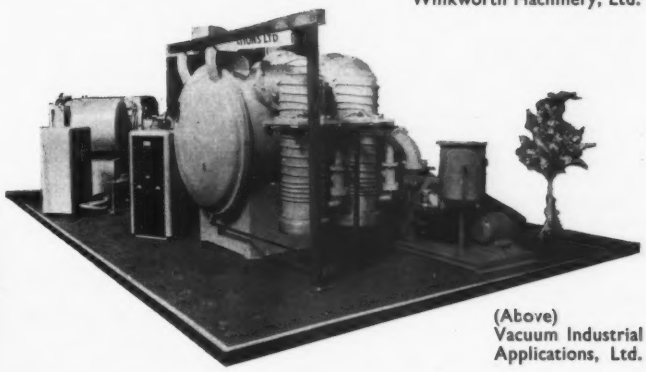


The Peco 4½-6-oz. injection moulding machine.



(Above)
Universal Tools,
Ltd.

(Above)
Winkworth Machinery, Ltd.

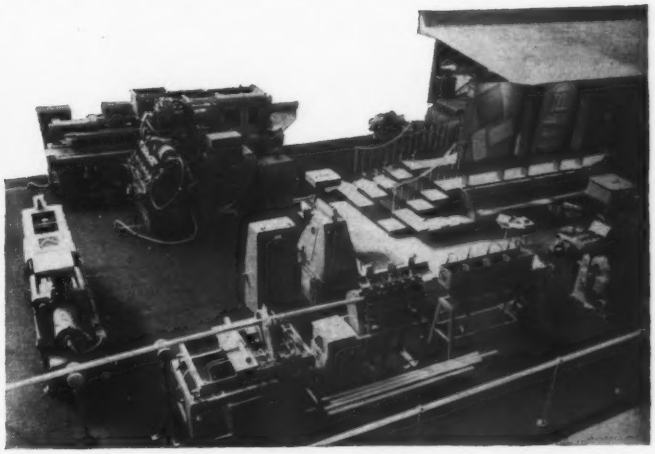


(Above)
Vacuum Industrial
Applications, Ltd.

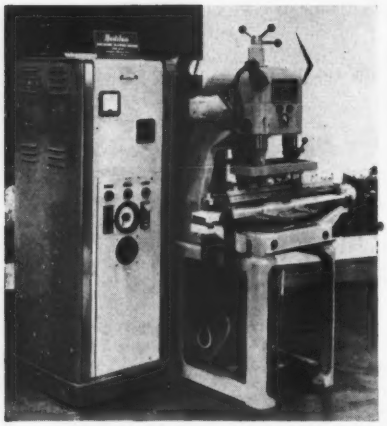
(Above)
Radio Heaters,
Ltd.

(Above) Redifon, Ltd and Rediweld, Ltd.

(Above) Simmonds Aerocessories, Ltd.



(Right) R. H. Windsor, Ltd.



The Redifon J.P.10 electronic welder.

charge of material is pumped from the heating chamber into the injection transfer chamber, moving the whole heating-chamber assembly back to its original position.

Peco Machinery Sales (Westminster), Ltd., 28 Victoria Street, London, S.W.1.

Injection Moulds

THREE moulds made for the toy and fancy goods trades were exhibited by Plastools (London) Ltd., also many examples were shown of the mouldings produced from their tools, including a cutlery box, combs and a honeycomb structure.

Plastools (London) Ltd., Cray Road, Sidcup, Kent.

MACHINERY

Thermoplastic Sheet Welders

TWO new models of the Radyne presses were shown for the first time at the exhibition. The new models W.12 and W.21 are foot-operated, table-type models having a power output of 1½ kW. and 3 kW. at 37 Mc/s respectively. The platen area is 26 in. by 16 in.

An additional feature that can be fitted to these models is a pneumatic booster to give greater pressures. This booster has already been fitted to the ½-kW. model.

Also on view were pre-heating ovens for thermosetting moulding powders.

Radio Heaters Ltd., Eastheath Avenue, Wokingham, Berks.

Electronic Welding Equipment

TWO new pneumatically operated presses were shown for the first time by Redifon Ltd. The J.P.12 and J.P.13 have been designed for the welding of large plastic articles and have a platen size of 24 in. by 18 in. and 40 in. by 30 in. respectively. The J.P.13 is of the four-post type of construction and to ease the handling of large areas of material a two-stage approach is used which allows the operator to bring the upper electrode to within ¼ in. of the material before applying welding pressure and power. A thrust of 1,450 lb. is normally available from an air-line pressure of 80 lb.

Even larger was a hydraulic 30-ton press designed for the welding of car or coach door trims and upholstery in a single-shot operation. The platen size is 78 in. by 39 in. and the press gives a contour weld of 480 in. by ⅛ in. on .01 in. double-thickness p.v.c. The power consumption is 37 kW.

At the other end of the scale the J.P.11 is a small 100-watt machine designed for spot welding and short-bar welds in the garment trade.

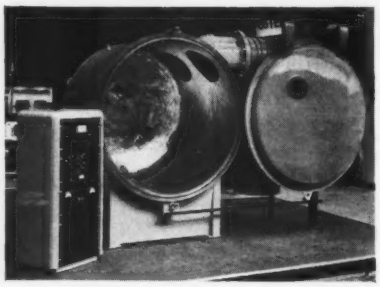
Several pre-heating units were also displayed ranging from the 600-watt 35 Mc/s to the 5.5 kW. 35 Mc/s machine. The latter will raise 3 lb. 14 oz. of phenolic X20 powder to 100° C. in one minute.

Redifon Ltd., Broomhill Road, London, S.W.18.

Specialized Fasteners

SPRING-STEEL fasteners which are self-locking and vibration proof were among the many types of nuts, fixes and clips featured by Simmonds Aerocessories Ltd.

Simmonds Aerocessories Ltd., Treforest, Pontypridd, Glamorgan.



A large capacity vacuum coating plant with a chamber 5 ft. in diameter and 4 ft. deep exhibited by Vacuum Industrial Applications Ltd.

Moulds for Plastics

MANY examples of the products produced in the moulds of Universal Tools Ltd., were featured on their stand. These illustrated the high degree of finish and attention to detail which are an integral part of good tool design.

Universal Tools Ltd., Tramway Path, Mitcham, Surrey.

Vacuum-coating Plant

A LARGE-CAPACITY coating plant was exhibited by Vacuum Industrial Applications Ltd. The chamber has one diameter of 60 in. and depth of 48 in. The door which moves sideways and is automatically located and clamped is worked from the control panel. The vacuum pumping equipment consists of a Kinney large-type mechanical pump of the gas ballasted type with a theoretical displacement of 200 c.f.m. This enables the time for pre-evacuation of the chamber to be kept within four minutes. The high vacuum is created by two 16-in. diffusion pumps, each having a speed of 5,500 litres per second within a pressure range of 1/10,000 to 1/1,000 mm.Hg.

The low-tension electrical supply is provided by two double-wound transformers in parallel giving a total output of 400 amps. at 12 volts. The number and location of the filament supports can be modified at will according to the requirements of the coating.

Vacuum Industrial Applications Ltd., Wishaw, Lanarkshire.

Twin-screw Extruders

THE complete layout for the extrusion of unplasticized p.v.c. tubing was demonstrated on the stand of R. H. Windsor Ltd. An R.C.100 twin-screw extruder with a capacity of 100 lb. per hour was being used. This machine has a splined-screw design which permits the easy removal of the working section of the extruding screws. Immediately in front of the die face is the cooling bath, enabling water cooling either by immersion or spray. From here the tube was fed through the positive pulling device to the cut-off section, the latter being a circular saw driven by a 1-h.p. motor.

A smaller edition of the R.C.100, the R.C.65, was also on show. This machine has a plasticizing capacity of 65 lb. per hour.

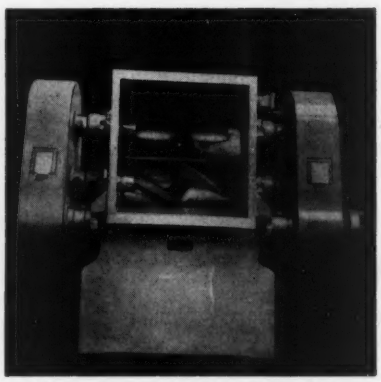
Of the injection-moulding machines the most notable advance was the use of a pre-plasticizing unit in conjunction with the SH8/10 machine. Mouldings in cellulose acetate of up to 32 oz. have been produced as against its normal 10-12-oz. shots.

R. H. Windsor Ltd., Leatherhead Road, South Chessington, Surrey.

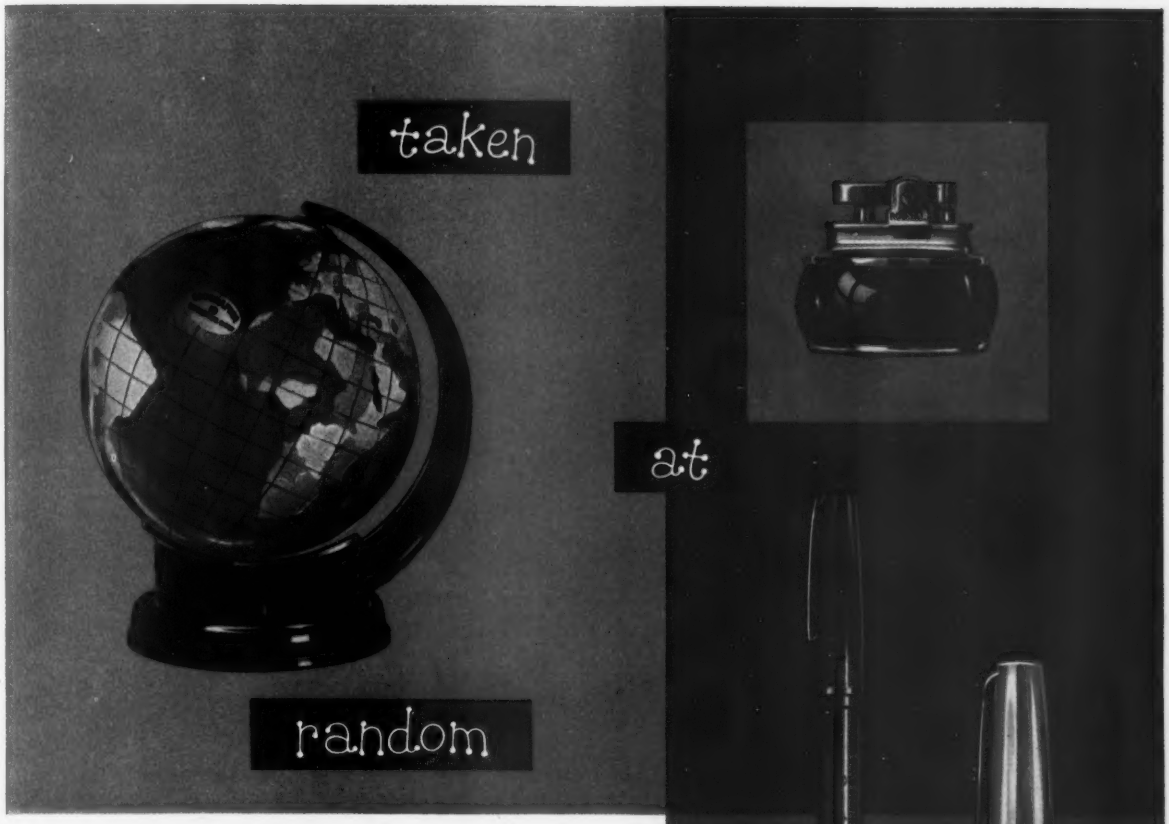
Mixing Machines

LABORATORY, pilot plant, and production models of mixers, incorporators and blenders were being shown by Winkworth Machinery Ltd. Ranging in size from 1 pint to 100 gallons they included Z blades, ribbon blades, double paddle, electrically heated and steam jacketed machines designed to cover all aspects of mixing in the plastics field. There was a 1½-lb. U-trough powder blender in the laboratory equipment and the largest exhibit was a 100-gallon U-trough blender with an 18-cu.-ft. capacity.

Winkworth Machinery Ltd., 65 High Street, Staines, Middlesex.



The heavy-duty jacketed incorporator made by Winkworth Machinery Ltd.



Take the pens, for instance: they're good to handle — and even a schoolboy would find them hard to break. Cellulose acetate is tough.

Take the table lighter: a luxury article. Cellulose acetate — unlike so many other plastics — is unaffected by petrol; and what plastic has a finish more luxurious?

Take the miniature oiling pen: cellulose acetate's clean transparency and imperviousness to oil puts a good idea into its most practical form.

Take the globe and its stand (all cellulose acetate): put your finger on any region, and it's more than likely that they're using products made with Courtaulds' cellulose acetate moulding powders.

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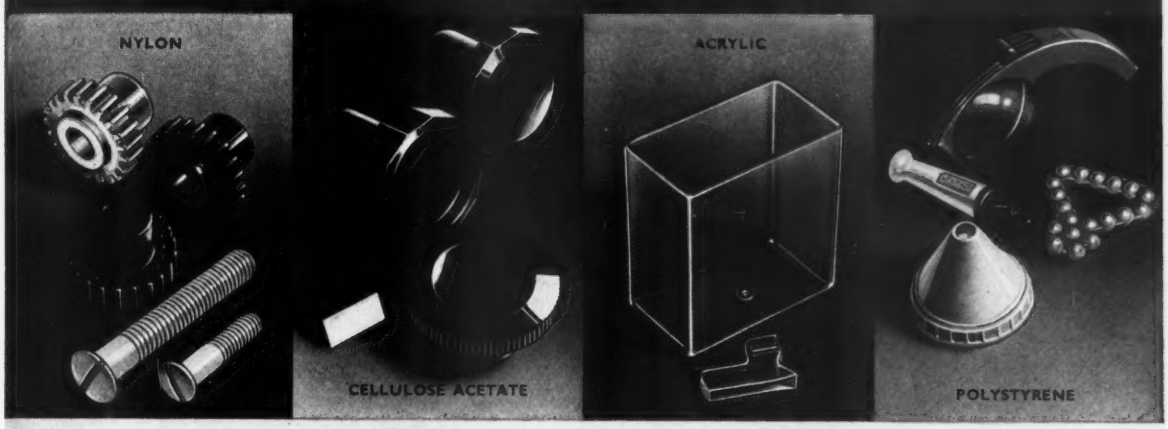
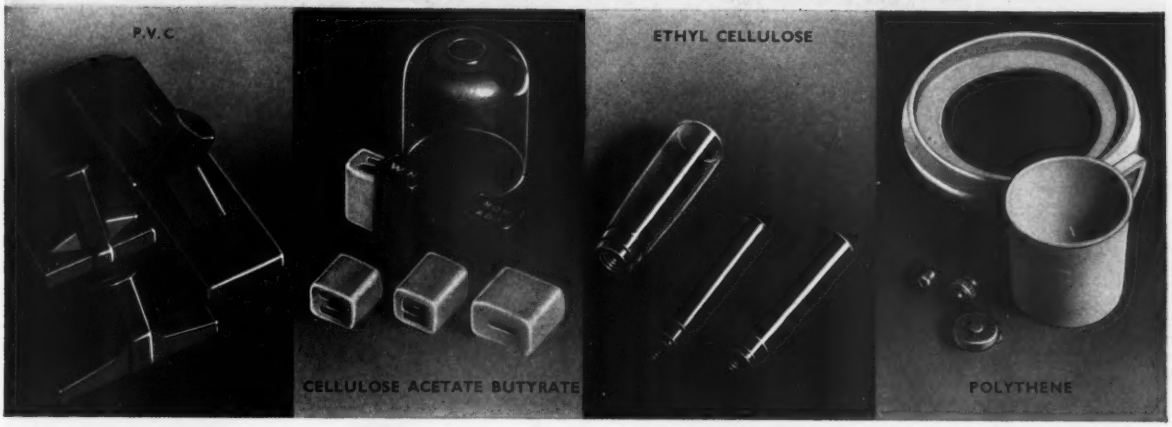
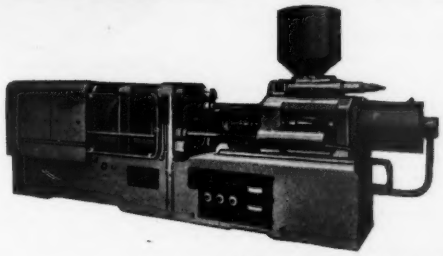
Insulators Ltd



injection mouldings





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Illustrated above are a few examples of the extensive range of Thermoplastic materials in which Insulators Limited produce components. Their experience extends over 25 years and embraces every branch of plastic moulding technique. All the unique skill and comprehensive technical knowledge of Insulators Limited are at your disposal.
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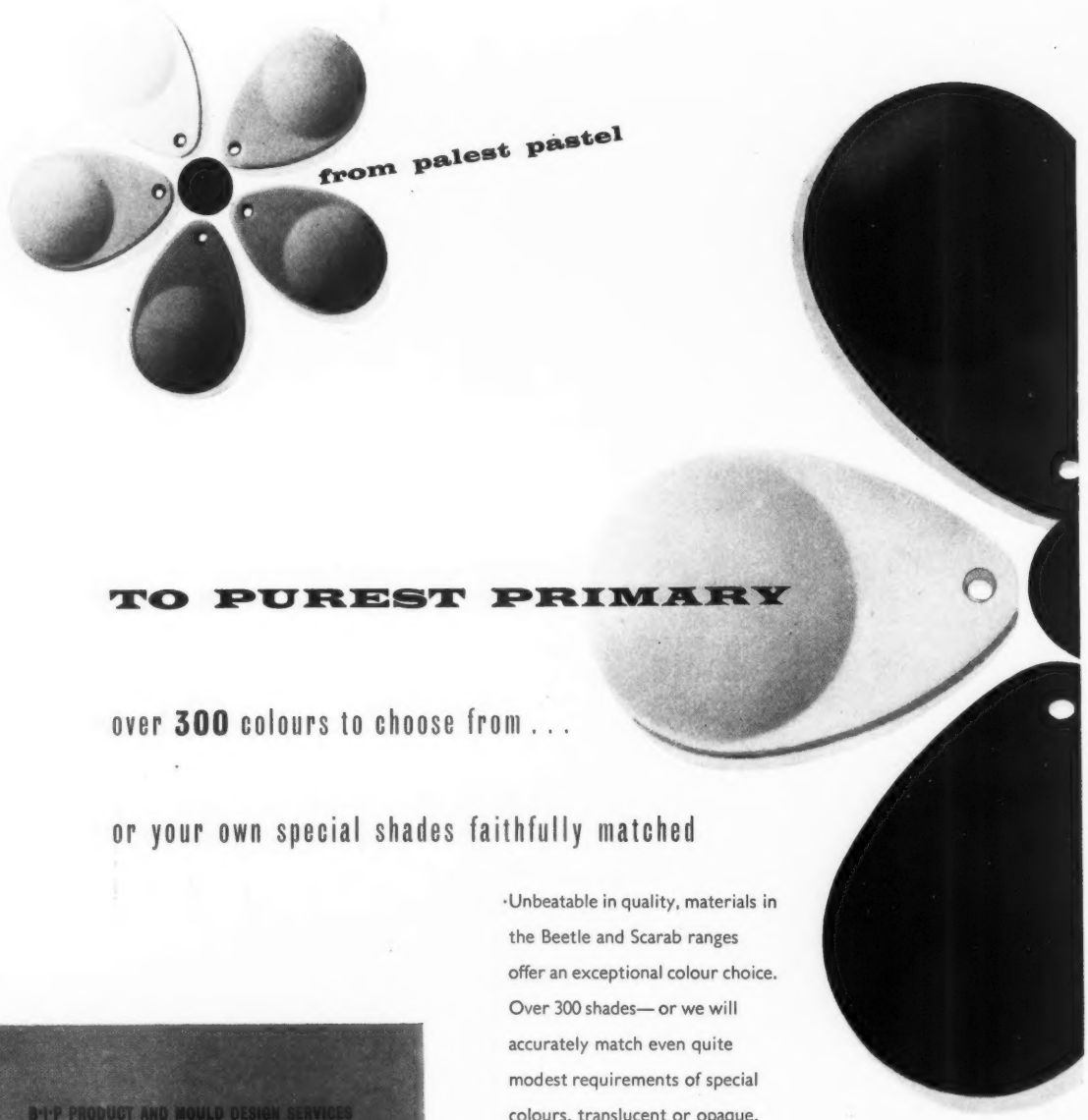

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DESIGN AT THE EXHIBITION

Convened by the Plastics Institute, a panel of three eminent men in the design field toured the Exhibition and selected items they felt to be of special merit. We are very pleased to publish the views of Sir Gordon Russell who, as Director of the Council of Industrial Design and a member of the panel, is especially fitted to discuss this subject.

By Sir GORDON RUSSELL, C.B.E., M.C.
Director, Council of Industrial Design

TO the layman the development of plastics has appeared to be so rapid, on such an immense scale and covering such a vast range of widely differing uses in almost every trade, that it borders on the miraculous. The wilder flights of imagination of the popular Press in visualizing whole plastic houses coming off a moving belt and being equipped with plastic furniture, floor coverings, curtains, cups, plates and toys were not immediately discounted. They were, in fact, partly true. That plastics, like all other materials, have their limitations, was not a doctrine that was likely to be popular with those who were scrambling on the band-waggon, and their misuse of these versatile materials has done a good deal of harm to a most promising young industry.

That this is recognized by all responsible firms in the trade is shown by the policy of the Plastics Institute in staging a selective exhibit at this year's British Plastics Exhibition. It is the policy of the Institute to try to ensure that the right type of plastic is selected for the multifarious uses with which the industry deals. This is not quite as easy as it sounds. But the Institute goes much further. It holds that if some other material, such as steel or wood, is more suitable than any plastic for a particular purpose, the customer should be told this without hesitation.

This enlightened point of view led the active Design Committee of the Institute to begin to grapple with other shortcomings. It is common knowledge that the design of many plastic articles—especially the so-called decorative ones—reached an all-time low in the early days. There has been some improvement. But it must have needed considerable courage for the Institute to inaugurate a scheme for selecting some 30 of the best-designed articles in the Exhibition and showing them as a special exhibit there. The Institute showed wisdom, too, in keeping the jury small and in going outside the industry for its members: Sir Francis Meynell, Master of the Faculty of Royal Designers for Industry, Mr. Misha Black, President of the Society of Industrial Artists, and myself, Director of the Council of Industrial Design. As we were given complete freedom and every facility, and could call on members of the Institute for any technical assistance we required, we found the experience interesting and enjoyable.

Broadly, the exhibits fell into two classes from a design point of view. There were those such as cables and ropes, where design, in all perhaps except colour, was dictated by a purely utility approach, and there were those such as telephones, buckets and handles of many kinds where the shape was of great importance. Some of these, telephones for instance, have been emancipated from pre-conceived ideas of shape when made in other materials, but in others far more imagination is necessary. As a whole, manufacturers are not yet fully aware of the immense advantage of a material which is not just coated with colour but is the same all the way through and does not therefore show scratches and chips. If they were, surely they would insist on good colours. "Muddy or blotched" is a poor choice, yet far too often it was the only one, with notable exceptions.

I believe that a selective exhibit might well become a regular feature of the Exhibition and one which, over a period of a few years, might prove of very real service to the whole trade. In the long run any grading up of products is bound to add to the goodwill of an industry. Very great advances in the design of products are quite possible to those firms who take the trouble to work out a coherent design policy. In this, The Council of Industrial Design might well be of value. It is anxious to be of service to anyone who wishes to discuss design problems, to be put in touch with a consultant designer, or to get a clearer picture of other trades which use plastic components. That design is an essential element of quality is not yet taken for granted. In this, the plastic industry is not exceptional.

In a new industry which grows as rapidly as plastics, a tradition is built up overnight and it may be either cramping or stimulating as in older industries. The easy way of copying something in another material already on the market and selling it a bit cheaper dulls the edge of thought and technical development may be so furious that it soaks up the whole time of the Board, unless they are big enough to strive to see a wider picture. But an industry whose lifeblood is experiment should surely experiment in design. And here there is at least no tradition to inhibit. The length of production runs in plastics when a tool has been made, makes the design cost per article very low.

I hope on the next occasion—for I am convinced that this experiment should be repeated—to see that a more prominent place in the Exhibition has been found for the selective exhibit, and that more attention has been paid to the design of the Exhibition as a whole. Some of the stands were very good.

Overseas visitors to an exhibition are valuable not only because they come perhaps to buy, but also because they can give a first-hand report of progress in plastics in their own countries. With the aid of a tape machine we were able to record on-the-spot interviews at Olympia ; some of these are reproduced herewith, and we wish to thank the visitors from abroad who co-operated. We are also most grateful to Office Machinery Ltd., 22 Kingly Street, London, W.1, who kindly loaned the recording equipment.

Introducing **Mr. F. R. Jacob,** representing Plasco S.A., Caroline 3, Lausanne, Switzerland.

Well, Mr. Jacob, you are a consulting engineer in Switzerland, and this is obviously not your first visit to Great Britain?

No, it is not. I have been here before, in 1949, 1950. I was actually studying over here, I was at the London School of Economics and then I left for the States in 1950.

And is this the first Exhibition for plastics that you have seen here?

Yes, this is the first Exhibition I have seen for plastics in England.

And obviously you have seen many Exhibitions on the Continent?

Yes, I have seen some in Italy and in Germany.

Well now, what do you think first of all of this Exhibition by comparison with those Exhibitions you have seen on the Continent?

Well, I think this one is my favourite one, it gives a better overall view I think of all the applications of plastics. I have got a lot of new ideas for when I go back to my country and to explain to manufacturers I am dealing with over there. What I like is the whole presentation of it and I have made some very good business contacts with some manufacturing companies in this country.

Good. This exhibition, of course, is a purely British exhibition, but in 1957 we think it will be an international one. Would you rather see an international exhibition in London, with manufacturers from all over the world exhibiting here? Or do you prefer the purely local exhibition such as this?

No, I definitely would advocate an international exhibition. Of course, I would not want it to be too large, I would not want it to get out of hand: it has already taken some days to see this one thoroughly.

In Switzerland I believe you are a consulting engineer?

Well, we are actually doing management consultancy in plastics. If a manufacturer wants to purchase a new line of products, we are doing the leg work and submit recommendations to him. Besides that we are dealing in plastic raw materials, machinery and any other materials for the use of the manufacturers.

What do you think of the materials that you have seen on display here? Are they up to the standard of Continental materials?

I definitely think so. Of course, I knew already some of the companies and I knew what they were making. But I was particularly interested in the new applications which you are making, the new materials, the new type of machinery you have on display.

In Switzerland I should imagine that injection moulding is growing very quickly?

It is yes, definitely. Every year we see some more companies entering the plastics field who are starting production. But we also are starting vacuum forming, the new process which I think is rather promising. Especially in Switzerland where we have a rather small market, four million people, instead of the 45 million you have in this country. You can't spend a lot of money on injection tools having only a four million market, so I think the vacuum moulding process is a wonderful thing because of the smaller moulding equipment costs, mould costs, etc.

We have an interesting situation in this country at the moment. Our manufacturers of injection-moulding machines are tending towards the large machines with the multi-cavity mould, that is the 8-oz. machine, the 10-oz. machine or even the 16-oz. machine. On the Continent we have the impression that people prefer the smaller-capacity machine, 2 oz. and 4 oz. with single-cavity moulds. Is there any particular trend in Switzerland towards either?

Well, I think it is just a matter of investment. In Switzerland we take a rather conservative attitude, but on the whole we want to wait and see what happens abroad, and then when we know all the facts, when we know costs, when we know the market for the products, then we go into manufacturing. Of course on these big machines you have very large capital outlay.

May I ask you one more question? You've seen the sort of mouldings and fabrications which we show here, do they compare with those which you do in Switzerland? For example we have seen some very fine examples from Switzerland of melamine mouldings in cups and saucers. Do you think that you have made greater progress in Switzerland than we have here? On the actual mouldings themselves? Higher quality?

I wouldn't say so actually. Of course there is one company which is producing melamine products in Switzerland and have done quite a bit of pioneering work on these materials. But I think today we are about equal.

★ ★ ★

Introducing **Mr. Jan-Erik Janson,** Secretary of the Swedish Plastics Federation, Stockholm.

Now Mr. Janson you have led a delegation of 26 members of the Swedish Plastics Federation, am I right?

I should say, 23 and three wives as well.

And they have come to this country to see the British Plastics Exhibition?

Not only the Exhibition but also to see something of the industry.

And how have you found the companies in this country?

Extremely helpful.

They have co-operated well, have they?

Yes. The first visit after our arrival was to I.C.I. at Welwyn Garden City and we saw quite a lot of interesting things. Then on Saturday and Monday we visited the Exhibition, partly the Convention. On Monday was also a visit to the Projectile and Engineering Co., Ltd., and Tuesday a party went to the works of B.X. Plastics at Brantham; on Wednesday we visited Monsanto Chemicals Ltd., at Fulmer Hall. On Thursday a group visited E. K. Cole Ltd., at Southend-on-Sea, and on Friday British Moulded Plastics Ltd. Next week we are going to visit Fibreglass Ltd., Streetly Manufacturing Company Ltd. and Ashdowns Ltd., and on Tuesday we are going to see the Bristol Aeroplane Co., Ltd. The last day will be Permali Ltd., Erinoid Ltd., and T. H. and J. Daniels Ltd. These two last days are arranged by Daniels.

So you have a very, very big programme indeed for all of your Swedish delegates?

As a matter of fact, some of them have unfortunately had to leave a little bit earlier than the rest. There are six left today, two leaving tomorrow. But on the other side the Group has increased, we have had in the Group two people coming on from the States. As a matter of fact one of them, has come from a round trip, from India, Japan, then back from America. And some of them have been joining us while they are staying here too. It has always been my impression that to get this opportunity of seeing the Exhibition and to combine it with works visits is very good. It is a good idea to bring out young people in the industry. It gives them an opportunity to get out on a more or less conducted tour. This is in fact the third time I have brought over a Group and I hope to do so again in the future.

Well, our companies in this country are always very pleased to have members from abroad to see their factories because ultimately what they see helps the industry as a whole and in very many cases is directly responsible for increased exports and increased know-how.

I must admit that from the experience I have had during my years in our Federation that I have found British industry extremely helpful, not only the materials manufacturers, but also the processing industry. It is much easier to arrange things here than in other countries in Europe.

As the Secretary of the Swedish Plastics Federation you are probably in a unique position, because you, more than anybody else, can see the progress of the industry in Sweden. Having seen this Exhibition in this country do you feel that the Exhibition shows an improvement over 1953?

My impression is, and this is also what I have heard from members of the Group, that this year the processing industry is showing more and perhaps also more new things than in earlier years. I must say that my impression is that there is a marked improvement, compared to 1951 and 1953. Of course this interest at the Exhibition on vacuum forming, that is quite an international sickness. I was astonished to notice that you were so up to date on machinery because I have a feeling that you are not yet producing all of the types of thermoplastic sheet for vacuum forming.

Well at the moment we have to depend on the acetate sheet for very large-scale production and only just recently, rigid p.v.c. to a certain extent, but only now are we beginning to see available supplies of polystyrene sheet which is the most popular material for vacuum forming.

Perhaps not only the most popular but also the cheapest.

Yes, the cheapest and most popular.

Yes, because you cannot always make use of the properties say, for instance, of rigid p.v.c.

Well, Mr. Janson, I want to thank you very much for giving us your views and we shall publish them in the July issue of *Plastics* as you suggested, partly to record your appreciation to the British manufacturers who have opened their factories to you. Thank you very much.

Please convey our very best thanks to all our hosts and friends and I wish them most heartily welcome in Sweden.

★ ★ ★

Introducing **Mr. Bela Kohn,** Director, Modern Plastic S.R.L., Avda. Caseros 4043, Buenos Aires, Argentina.

This is your second time over here in England?

Yes, I stayed for 10 days in 1951 and I am staying for 8 to 10 days this time. I came direct from the Argentine to see your Exhibition, and to see what you can show us.

And which aspect of plastics does your company cover, Mr. Kohn, in the Argentine?

I am a moulder. We are working in phenolics, urea, melamine, and injection moulding and extruding polythene, p.v.c., acetate, and I am here to see what you can make in this country.

How big is your plant in the Argentine, how many presses have you got?

Well, we are not the biggest company but we stay in the first line of moulders. We have 800 tons capacity approximately in compression and 40 oz. in injection. Of course, there are other factories bigger, but we specialize in quality; that is our policy.

What do you think of the plant on show here, particularly injection moulding machinery?

I am very agreeably surprised to see such big and efficient machines compared with the machines which came to our country many years ago.

In other words you see a very great improvement in our machinery.

Yes, a great improvement during the past few years.

Would you consider purchasing British machinery as distinct from American, or do you feel that the American machinery leads?

Well, it is not easy to say because every moulder searches for new systems, new machines; but it not only depends on the efficiency of the machine, it also depends on whether we can get a licence to change our existing machines.

And do you see any improvements in the moulding materials in Britain now?

Yes, particularly in the moulding powders, for example the phenolics. For many years now we haven't imported these from Britain, since we make our own phenolic powders. And now we have begun to make urea moulding powders in our country. We do, however, receive very good thermoplastic materials from this country, polythene, polystyrene, p.v.c., acetate, all of very good quality.

Now one last question. What do you think of the standard of mouldings on display here?

I have had an opportunity this morning of seeing many moulded articles, and the finish of them was perfect. I remember particularly one stand, I think it was Birkbys, Ltd., they had a very nice stand and a perfect finish was seen on all articles shown. I am very satisfied indeed with this visit to the British exhibition.

Introducing **Mr. Marcy W. Osborne, Jr.,** Manager, International Sales, B. F. Goodrich Chemical Company.

In the capacity of Export Manager of the B. F. Goodrich Chemical Company you must see a very great deal of the plastics industry outside the U.S.A.

A good deal more of it outside the U.S.A. than inside the U.S.A.!

We have very good relations here with British Geon, as the English end of the B. F. Goodrich axis. As a matter of fact we had here yesterday afternoon two of the miners who are demonstrating the use of p.v.c. on their stand.

Oh yes, I met those boys, very interesting fellows.

They have recorded their views on the use of p.v.c. in the mines.

It's been a wonderful thing and a great help to have introduced p.v.c. from the standpoint of safety in the mines.

What do you feel Mr. Osborne, in view of your position with the B. F. Goodrich Chemical Company, of the progress made in this country using p.v.c.?

The progress here in England has been remarkable and very rapid. The most outstanding exhibit today is your mine belting. In other fields, in rigid p.v.c., plasticized p.v.c., the progress is extremely rapid, and we have certainly witnessed a remarkable growth in our associated company British Geon. In fact they can't quite supply enough material now to cover the whole market.

We have seen in this country tremendous expansions; in fact, I believe I am right in saying that the annual production at present, taking all of the companies involved, is 35,000 tons, and by 1957 we shall be talking in the region of 70,000 tons, which is a tremendous increase. Do you think that the growth that has taken place in this country, and also in America, is being reflected in all of the other countries in which you are interested?

Well, we find that the growth is particularly great in the European countries and now we are beginning to see tremendous expansion in other countries, such as Brazil, in South America, in Japan, in Australia, and there is also a big growth in South Africa. Yes, the growth in p.v.c., I would say, is quite general, and it's our feeling that we are still on the growing curve, and that there is no indication of a levelling out. Continually we see an extension in the number of applications of p.v.c.; some things level out, and yet there may be four or five new things to take up the slack. It is a very, very dynamic industry.

Well, we have noticed here how p.v.c. usage has been popularized; that is, the long-range publicity from the raw materials manufacturer direct to the consumer, which in turn stimulates the man between, the fabricator, and makes a demand for him, a ready-made market as it were. Is that the sort of thing you would like to see take place in all of these countries?

It's a very healthy set-up. I think we, as raw materials suppliers, and most of our competitors, have concentrated in our advertising on trying to suggest new usages for p.v.c. and to stimulate not only the general public or the consumer but also the manufacturing industry to conceive new ideas for the use of this type of material. I have always felt that no matter how good the raw materials supplier may be in the manufacturing industry in general there are many brains which can conceive the ideas which the raw materials supplier may not think of himself. The effort, we think, should be twofold, at the consumer to educate him as to the proper treatment, the proper way to handle the material and also the manufacturing industries to get them to think of new places where synthetic resins and synthetic plastics can be used from the cost standpoint, and weight, etc.

Yes, we have witnessed in this country, during the past two years, a considerable growth in the use of p.v.c. for piping, and I should imagine that in the countries where development is still going on at a very great pace we are going to see very large usages of p.v.c. in that form.

I think you will see tremendous progress. I think that the industry is just at the beginning of a remarkable growth in the field of rigid piping; there are very large markets for some of the backward areas, the areas where irrigation is a very serious problem, especially, I should imagine, some of the Middle East countries, in some areas of Africa, South America, and I think a very remarkable rate of growth will be seen in Mexico too, in five or six years.

Mr. Osborne, have you had a chance to look at the plant and equipment on display here, for the purpose of producing extruded materials?

Yes, I have had just a little chance.

And what do you feel about the sort of machinery we have got to show here? Do you think we are on the right lines?

Definitely. You have some very fine equipment which is on display, the sort of equipment which we are familiar with in the States, the same type of machinery, the twin-screw extruders, single-screw extruders, large injection presses for injection moulding of things like rigid p.v.c. I think another important factor in the growth of p.v.c. is the continual improvement of the machinery. I think we will see a continuing trend for the specialization of machinery to process the more difficult types of plastics materials, and p.v.c. is a good example. In the rigid form it is very difficult to process. We see today a vast improvement over the types of extruders and injection moulders which you had three of four years ago. Every time you improve your machine you expand the use for your plastic material.

Well, Mr. Osborne, I want to thank you very much indeed for sparing the time to tell us this, and I am sure our readers will be very interested in what you have said.

★ ★ ★

Introducing **Mr. A. Dobrowen,** Consultant to the Norwegian plastics industry, Oslo.

Mr. Dobrowen, you were with the Norwegian Industries Development Association and you were at that time the specialist on plastics materials and now you have become a consultant on your own in Norway?

Yes, that is right.

And you were over here for the 1953 British Plastics Exhibition?

Yes, I have seen all the British Plastics Exhibitions.

Then you are very well qualified to answer the sort of questions that I want to ask you today. First of all, compared with the 1953 Exhibition, would you say that this one showed signs of improvement?

Well, yes, I think there is a very high standard level of everything on display and certainly in certain trends, the development in the glass-fibre polyester field, for example, and in the vacuum forming process, great advances have been made.

When you came over here did you come just for a general look at what was going on over here or have you come to look at any special aspect of the plastics industry?

Well, I think both. For the first a general interest in the developments in England and to see what is going on here, and, secondly, because I am interested in vacuum forming and have had discussions with the people who make the

machines, for example the Formvac machine and the people who are representing them.

On the subject of vacuum forming, several of the visitors who have been interviewed here have reported very great interest by their countries in the process. I take it that that is the case in Norway as well?

I think that vacuum forming would be very good especially for a country like Norway, because small countries always have difficulties with big mouldings, as we have only short runs. We have no really big injection-moulding machines in Norway, I think the biggest is something like a 10-oz. machine and big machines like that are too expensive. But with vacuum forming you can make quite a number of big things with very reasonable cost moulds, and as we have quite a big refrigerator industry I think we will certainly try to make use of the vacuum process.

Yes, I understand that if you want to bring a big machine into Norway, you have to obtain Government permission first.

It is not only the big machines but the materials. If you apply for a raw material licence for toys or novelties made on a vacuum forming machine you would certainly not get them. But if you apply for raw material for refrigerators you have a much better chance, because the refrigerator people are quite big themselves, if they can't get the raw materials then the refrigerators have to be imported.

What is your view, having seen the Exhibition in London, on the materials that we are producing today? Do you feel that we are making the sort of materials in which Norway is going to be interested?

I think so; Norway has always bought most of its raw materials from England and I don't think that there is any sign that it will change, except for those materials which Norway now produces, because although we have no customs taxes on raw materials from abroad which are not made in Norway, as soon as the material is made in Norway we have to pay 12%. So that I am especially interested in the glass-fibre polyester field and this is now starting production in Norway, on the Reichold licence. This means that we will probably be cutting down on the import of polyesters, which to a great extent have been obtained from abroad.

It may well make a very interesting situation because if a manufacturer from abroad can make arrangements to make a material in Norway he must get the majority of the market eventually, because the imports from other countries are automatically taxed. It encourages people to spend money in Norway and build plants.

That is a very good idea but we would certainly have to have some Norwegian basis, or some advantage, if you have just to import everything it is not too good.

I believe the Norsk Hydro Company is now making p.v.c.?

Yes, that is very successful. I believe they are making something like 3,000 tons a year and they have been over here for this Exhibition and they are selling quite a lot in England. So I think they will increase their production to 5,000 tons a year.

I should imagine that the p.v.c. industry will grow in Norway because of the ready availability of the cheap electric power.

Yes, well the people who make p.v.c. in Norway are astonished that even while the import licensing situation is so difficult that not more people in Norway are using p.v.c., just to get the raw material easily, but they do not care very much now because they can export quite a lot. They have no difficulty in getting rid of it.

I should imagine we shall see bigger and bigger sales abroad of Norwegian p.v.c., at least in the countries where the customs are not so high that it is impossible to compete. In your position, Mr. Dobrowen, as a consultant, you must see the Norwegian plastics industry very clearly as a whole. Do you think that it is growing in size as quickly as, for instance, the industry in Britain, in Germany and France? Relatively speaking, of course, bearing in mind the smaller population.

Well, I think most of the plants have been quite successful, although certainly the situation for licences for new machines and things like that slows the development down but I think it is growing and the quality is getting better and better.

Tell me, have you yet seen in Norway any of these examples of plastics that have been treated with atomic irradiation?

Well, we know something about it and we have read about it in periodicals and I have seen it here two years ago at the Exhibition and I know there are certain people who are interested to make experiments with it, in the packaging field, and in the field of pipes. Extraordinarily enough in Norway we have a small firm which is one of the biggest manufacturers in Europe of polythene water pipes. This company is very interested in making experiments with irradiation, for pipes, which perhaps will be used for hot water, and as we have quite a number of places working with atomic research we can easily make the experiments.

We hope in this country that when our atomic power stations are running efficiently we shall have sufficient surplus radioactive waste matter which we can use fairly cheaply for this purpose, but it is a long way ahead yet.

Now you mentioned a little while ago your interest in the polyester field. In this country, of course, many people are paying great attention to polyesters. Is that true in your country as well?

Yes, I think the interest is growing very rapidly now, but it is a field where experimental work is more expensive than in quite a number of other fields because the materials are quite expensive and also because it is not so easy as in injection moulding to find an article which will sell right away. As the companies are small so it takes more time, but we have now the manufacture of helmets for motorcyclists and things like that, chairs, etc., but I think it is going to develop quite a lot and certainly the military people are interested in several applications.

★ ★ ★

Introducing **Mr. A. Harsen,** representing the De Forenede Olietojsfabriker A.S., Ovesundsrej 144, Copenhagen 5, Denmark.

Now what do you do in Copenhagen, Mr. Harsen?

We are coaters of p.v.c. and synthetic rubber, textiles, unsupported sheets, ready-made rainwear, both for the man in the street and for the fisherman.

And you don't actually do any calendering yourself?

No calendering, just spreading.

Have you any ambitions towards doing the calendering in Copenhagen?

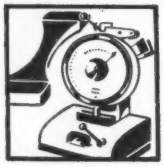
No, we have done some experimental work making sheets, but we find that the capacity in Europe is so great that we are better off buying the calendered sheet from the manufacturers than in trying to make it within our own borders.

Yes, of course, and do you find that in Denmark there is a tremendous growth in the use of p.v.c. materials on the part of the public?

We have seen quite a new market grow up in the protective clothing industry, mainly the market consisting of the contractors, the workmen working in the street. When the rain starts they normally go into a café and have a beer, until the rain stops, but now they realize that they make more money working out in the rain in their protective clothing. And in the fishing industry, as in Norway, we have found that the better quality lasts longer and more people use it in the fishing industry, and in the canning industry, each year.

World's Industry Employs Plastics

MATERIALS and TESTING



Effect of speed in testing plastics.—F. S. McGarry and A. G. H. Dietz review recent developments in testing with respect to apparatus, techniques, material properties and results, at a recent ASTM Symposium on Speed AST of testing.
(*ASTM Bulletin*, 1955/May/16.)

Wettability of nylon.—An interim report of the U.S. Department of Commerce is based on observations of the equilibrium contact angle formed by a liquid drop. Wettability by polar hydrogen bonding liquids is increased when both the amide group and the ester group are present in the solid surface.
(Office of Technical Services, PB 111448, Washington 25, D.C.)

Vinyl Plastisol.—New unique application is for flexible expansion bellows with extreme variation in wall thickness. Plastics have superior oil resistance and low temperature flexibility.
(*Autom. Industries*, 1955/May 15/98.)

Chemistry and technology of urea-formaldehyde resins.—Known and hitherto unknown relationships between reaction conditions and usefulness for varnishes of alcohol modified urea-formaldehyde resins are shown by H. Fahrenhorst.
(*Kunststoffe*, 1955/June/219.)

Fatigue testing of non-rigid plastics.—R. H. Carey shows that fatigue life is primarily a function of the applied stress.
(*ASTM Bulletin*, 1955/May/52.)

Denser foaming plastic.—Corform 114 is a liquid phenolic resin for structural core applications; its strength being 50% higher than that of former products. Compressive strength is 37 p.s.i. for a density of 3 lb., increasing to 1,100 p.s.i. for 21 lb. density.
(*Autom. Ind.*, 1955/June/87.)

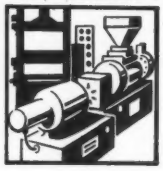
Determination of phenol and o-cresol in mixtures.—M. Krahl describes a method of quantitative determination of phenols by condensation with formaldehyde to produce resite. It can be used for determining those constituents of alkaline liquid resins not precipitated at pH 4.5. An additional method is also given.
(*Kunststoffe*, 1955/June/224.)

Polyethylene wax.—Epolene is supplied in pellets of rice grain size. It is easy to handle and melts quickly. It is compatible with usual animal, vegetable and mineral waxes and is used to up-grade paraffin, a basic ingredient of melt coatings.
(*Design News*, 1955/May 15/92.)

Migration of plasticizers.—G. Beck gives for the first time data for the migration of the plasticizer between plasticized and unplasticized p.v.c. films. Common and p.v.c. plasticizers of different K-values have been investigated.
(*Kunststoffe*, 1955/June/230.)

Extruded nylon.—Large scale production of caprolactam nylon has started in U.S.A. The material has high tensile strength, high resistance to abrasion, light weight and self-lubricating properties. Applications of this material are gears, bearings, bushings, wire jacketing, cable coating, valves etc.
(*Design News*, 1955/May 15/4.)

PROCESSES : MACHINERY



Pressure of mechanical plastics presses.—J. Wolff determined the pressure of mechanically operated plastics presses by means of wire strain gauges. In this way the approximate mould pressure can be determined. After a "flow" pressure followed by a small drop the actual "holding" pressure begins which remains constant during the curing period. The "flow" pressure is lower than the usual one.
(*Kunststoffe*, 1955/June/226.)

Moulds for injection moulding machines.—H. Gastrow describes moulds for components with internal undercuts, threads, projections and cavities.
(*Kunststoffe*, 1955/June/249.)

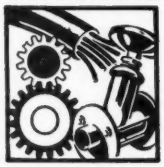
Design of low pressure moulds.—C. Rank describes in detail the manufacture of moulds from artificial stone compounds for low pressure and vacuum moulding. Recommendations for the design of the frame, the preparations for casting and surface treatment are given. A multilayer method is recommended.
(*Kunststoffe*, 1955/June/252.)

Preventing accidents on injection moulding machines.—Owing to the large number of accidents the "Berufsgenossenschaften" (Federation of Trades), have prepared new preventive regulations for these machines. The problem has also been discussed in an article in the Journal of the above Federation.
(*Kunststoffe*, 1955/June/252.)

Advantages of plastic tooling.—This can be applied to smaller production equipment. The weight is lower and the costs only a fraction. A jig in steel would cost $2,300 and weigh 1,800 lb., when combining plastics with steel the costs were reduced to $450 and the weight was only 300 lb.
(*Machine and Tool Blue Book*, 1955/April/250.)

Thread sealing compound of Teflon is recommended for pipes carrying volatile acids, alkalis and solvents. The chemically and biologically inert compound can be used continuously from −150 to +500 deg. C.
(*Design News*, 1955/May 15/92.)

INDUSTRIAL APPLICATIONS



Polyethylene for wire and cable.—Great strides are being made to adopt this material to the specific needs of industry. Performance has been improved both by basic changes in molecular structure and compounding with improved stabilizers and other ingredients.
(*Wire and Wire Products*, 1955/May/551.)

Reinforced plastics replace aluminium.—For covering the propeller hub of Curtiss-Wright propellers new reinforced plastics are being used.
(*Aero Digest*, 1955/Jan./54.)

Plastic fuel tank.—Pastushin Aviation Corp. have developed a new technique for producing jettisonable fuel tanks and missiles of glass fibre resin, for instance a 200-gallon tank.
(*Autom. Industries*, 1955/May 15/218.)

Ballbearing cages of plastics.—A. Gremer reports on wear tests with five different plastics and compares them with brass and steel. Some plastics showed improved properties.
(*VDI Zeits*, 1955/June 11/509.)

MISCELLANEOUS USES

Polyamide - epoxy coating resins.—New blends have been found with affinity for glass fibre in either sheet or fibre form, giving better bonding and fewer voids. Properties are said to be superior to conventional thermosetting materials.
(*Electrochemical Society 107th Meeting Cincinnati*, May 1-5, 1955.)

Polyamides in automobile design.—H. Zickel gives a survey of the properties and the various applications polyamides (Nylon, Perlon, Ultramid, Trogamid, etc.) have found in modern automobiles.
(*Werkstatt and Betrieb*, 1955/March/105.)

O-ring seals.—R. Becker describes the development and application of new versatile sealing elements. Data on friction and life are given.
(*Werkstatt and Betrieb*, 1955/March/111.)

Plastic fasteners.—A number of plastic fasteners have been developed by the Shakeproof Division of Illinois Tool Works. The following four basic types have been developed: (a) Plasti-rivet, (b) Plasti-support, (c) Plasti-grommet, (d) Plasti-rings. In particular the Plasti-support has brought great savings in refrigerator shelf supports.
(*Fasteners*, 1955/No. 2/3.)

LETTERS TO THE EDITOR

Correspondents are reminded that a stamped and addressed envelope should be enclosed in all cases where a personal answer is desired. It is understood that any letter received may be published at the discretion of the Editor.

Sheeting Required

SIR,—We shall be obliged if you will furnish us with the names of the firms manufacturing pliable plastics sheeting of the order of .006 in.

C. T. DELANEY.
Delaney Gallay, Ltd.,
Vulcan Works,
Edgware Road,
Cricklewood, N.W.2.

Trade Inquiry

SIR,—We should greatly appreciate being put in touch with a suitable manufacturer for the following items.

Trays with close fitting lids. Material able to withstand, without buckling, a temperature of 65° C. Size 5 in. by 5 in. by 1-in. deep or near size.

Nylon based plastic .007-in., .008-in., .009-in. thick. This material is marketed in the U.S. under a trade name of "Mylar."

J. DATSON.
Pye Industrial Electronics, Ltd.,
Exning Road,
Newmarket.

Plastic Filament for Netting

SIR,—We are anxious to obtain plastic filament, similar in gauge and appearance, to cotton twine. We believe that there is such an extrusion on the market, suitable for making up into shopping bags.

We are not referring to nylon or Perlon filament.

Can you kindly put us in touch with the manufacturer of such a material?

D. M. RODGERS.
15 Boundary Drive,
Hunt's Cross,
Liverpool.

Rigid P.V.C.

SIR,—We are looking for an unplasticized p.v.c. (hard foil) similar to a German product known as "Genotherm" and should be obliged if you could put us in touch with a firm producing this. As far as we can make out this material is very flexible, yet rigid, and capable of containing liquids. It is also easy to manipulate and economic to produce.

W. M. DE MAJO.
33 Jubilee Place,
London, S.W.3.

Urea Casting Resins

SIR,—Would you be kind enough, please, in advising me on the following matter. I wish to make small castings of urea resin rubber moulds, these of course will have to be cold setting. I am under the impression that a certain kind of this urea resin is soluble in water bringing it to a consistency of treacle after which a hardener is added. Quick setting is not of any importance providing the setting time is limited to a few hours.

JAMES S. STOTT.
321 Back Tottington Road,
Epton,
Bury, Lancs.

Battery Separators

SIR,—I am interested in the manufacture of micro-porous battery separators from plastic materials. Can you let me know the process and the names of suppliers of equipment and raw materials?

J. N. BOSE.
22/1 Ballygunge Circular Road,
Calcutta 19.

Trade Inquiry from Israel

SIR,—I should be obliged if you could put me in touch with the companies manufacturing plastic vacuum forming machines, ancillary equipment and suppliers of suitable material.

I should also like to have the names and addresses of companies manufacturing equipment for spraying plastics on to metals, wood, etc.

I wish to contact companies manufacturing piping for irrigation, in plastics materials, and also the manufacturers of plant and equipment to carry out this work.

In conclusion I would like to obtain agencies in Israel for the following materials: Polystyrene, polythene, p.v.c. and p.v.c. re-claimed material.

L. KARDOS.
3 Frug Street,
Tel-Aviv,
P.O.B. 3045,
Israel.

Synthetic Sausage Skins

SIR,—We are interested on behalf of one of our clients, to obtain information about the use of plastics in the manufacture of artificial sausage skins. Any information you can give we should be very pleased to receive.

N. V. DEKKER AND VAN DE VEGT.
Utrecht,
Holland.

[EDITOR'S NOTE: Sausage skins have long been made from very thin grade viscose rayon.]

Cellulose Acetate Lids

SIR,—We are interested in the manufacture of acetate lids for rectangular cardboard boxes of various sizes and should be most grateful for any information you can give concerning the various processes, and machinery required.

THE DUBLIN BOX CO., LTD.
9 Lower Ormond Quay,
Dublin, C.9.

Vinyl Flooring Compositions

SIR,—We would feel most obliged if you could give us some information as to general formulation, references, etc., of cold setting flooring compositions based on polyvinyl resins.

AVONCLIFF BIOLOGICAL LABORATORY.
Bradford-on-Avon, Wilts.

Moulds for Sale or On Loan

SIR,—We should be very obliged if you would kindly bring us into contact with some organization for the loan of moulds or sale of second-hand moulds.

LAVORAZIONE THERMOPLASTICI INDUSTRIALI S.r.l.,
Corso Venezia,
Milan, Italy.

Casting Resins

SIR,—We are interested in having made a small number, half a gross or so, of flexible moulds suitable for casting polyester resins. These moulds would be circular, of 3-in. diameter. Can you suggest the correct medium to use, and recommend a concern who might undertake the manufacture of these.

Secondly we are interested in obtaining a supply of plastic letters, pink in colour, suitable for moulding within transparent polyester resin castings. These letters will be required as a five-letter word, about $\frac{5}{16}$-in. to $\frac{1}{4}$-in. high, and should be of a material that will readily mould in polyester resin.

COLPLAS (LONDON).
31a Queen's Mews,
London, W.2.

Vinyl Organosols

SIR,—I should be very much obliged if you could let me have a list of manufacturers and suppliers of organosol and plastisol vinyl resin compositions.

J. C. WILLIAMS.
203 Albany Street,
London, N.W.1.

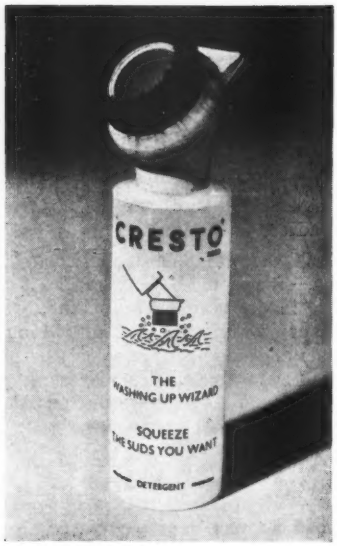
Blow Moulding

SIR,—Our attention has been drawn to an article on page 114 of the April number of *Plastics*, describing a machine and process for the production of blown plastic articles.

We would call the attention of anyone proposing to use this process, particularly in the manner described on page 115 and illustrated in Fig. 7, to our Patent Specification No. 697,326, which refers to the blowing of plastic bottles and the like in the inverted position.

V. C. WEBBER,
Managing Director.
Fraser and Glass, Ltd.,
Woodside Lane,
London, N.12.

New Productions



(Left) Polythene soap and brush unit manufactured by E. Shipton and Co., Ltd.

(Right) Acid bucket designed for the safe transportation of corrosive fluids, fabricated from p.v.c.

Soap and Brush Unit

E. Shipton and Co., Ltd., of Northwood, Middlesex, are the manufacturers of this "Cresto" polythene bottle "soap-and-brush-in-one" cleaner. The bottle has a detachable rubber head, with a nylon and bristle circular brush fitted into it. Industrial Appliances Ltd., 21 Grosvenor Street, London, W.1, are the distributors.

To charge the bottle, all that is required is to remove the brush head, tip in detergent or soap powder to reach the measure line, fill up with water, replace the head and shake. When the bottle is squeezed, suds bubble out and are retained in the brush.

Ice Cube Tray

A refrigerator accessory now being produced in America, by Anchor Plastics Co., of Chicago, for Tremax Industries, also of Chicago, is illustrated below. Moulded in Tenite polythene the tray is designed for the making of small ice cubes for cooling drinks. The flexibility of the polythene facilitates the removal of the cubes from the tray, which incidentally produces 90 cubes, and the small size of the cube enables quick freezing to occur. The small size of the cube has other advantages in that it does not dilute the drink to such a great extent, and for quick cooling several small cubes are more effective than one large one.

Tenite polythene is manufactured by Eastman Chemical Products Inc.

(Left) Flexible polythene ice cube tray moulded in America by Anchor Plastics Co.

Ampoule Container

The photograph below illustrates a completely new plastics container for ampoules, made by the Plastics Division of Universal Metal Products Ltd., for Glaxo Laboratories Ltd. As will be seen, each ampoule is packed separately from its neighbour, and whilst held securely without danger of breaking, it can easily be removed without disturbing the rest of the pack.

A very important feature of this pack is that, even should the cardboard slide lid be removed, the ampoules remain safely in the specially designed box, even when it is turned upside-down. The box is injection moulded in polythene.

(Above) Ampoule container moulded in polythene by Universal Metal Products, Ltd.

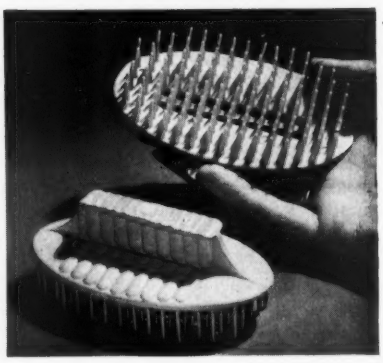
Acid Safety Bucket

Fabricated by Horwitch Smith and Co., Ltd., this new bucket has been specifically designed for the safe handling of acids. It is fabricated from Oxythene V grade rigid p.v.c. and has a detachable safety cap made from Oxythene G. Plastisol. The long spout is a safety measure when carrying and allows easy and accurate pouring. Its slim design is such that carrying is particularly easy and safe. The capacity of the bucket is two gallons and it can be used in conjunction with the acid carboy pump, also manufactured in p.v.c. by Horwitch Smith and Co., Ltd., for the decanting of acid from carboys.

Shampoo Brush

Also from America comes the polythene shampoo brush designed to thoroughly massage the scalp as well as assist in the washing of the hair. This also is injection moulded in one piece in Tenite polythene. The back of the brush has been specially designed to provide easy holding for the user and it is being made in a variety of pastel colours.

The shampoo brush is being produced by Thomas Manufacturing Corp., of 80 Clinton Street, Newark 5, New Jersey, U.S.A.



(Right) Polythene shampoo brush designed and produced in America.

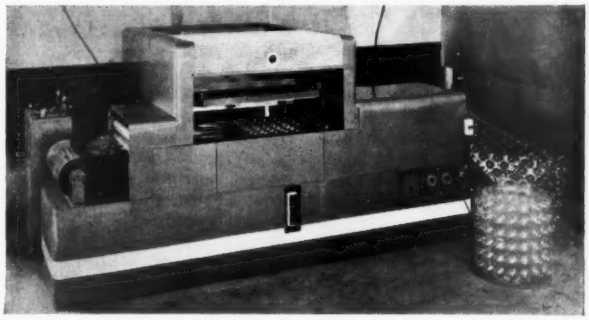
Plastics NEWS

Raw Materials, New Plant, Works Organization, Control Apparatus, Research, Personal and Trade Notes

AUTOMATION IN VACUUM FORMING.—A fully automatic roll-feed vacuum forming machine designed for the continuous production of packaging containers has been built by Auto-Vac Company of Fairfield, Connecticut.

The maximum platen area of the machine is 20 in. by 30 in. and the minimum 12 in. by 12 in. The action is drape and vacuum forming and once set requires no further attention except for the fitting of new rolls of material. The heater is of the radiant heat type, designed to provide added heat at outside edges of the area. Feed mechanism is adjustable and will feed automatically lengths of from 12 in. to 32 in.

Operating speeds of four cycles per minute are claimed which, it is suggested, will be a considerable advantage in the packaging field where it should be possible to follow on with automatic trimming, filling and sealing.



The roll-feed fully automatic vacuum forming machine.

SWISS INJECTION MOULDING MACHINES.—Machine Factory and Foundry Ltd., Netstal, Switzerland, who are manufacturers of 3 oz., 7 oz., and 12 oz. injection moulding machines, announce that they have appointed the firm, Lawfer and Co., Ltd., 27 Regent Street, London, S.W.1, their exclusive agents in the United Kingdom, to whom all enquiries should be addressed. Lawfer and Co., Ltd., also represent Messrs. Holzverzuckerungs, AG., Zurich, Switzerland, who are the manufacturers of a polyamide resin (Nylon 6) sold under the trade name Grilon.

GERMAN MACHINERY GUIDE.—The 1955 edition of the German Machinery Guide "Who Makes Machinery?" can now be obtained from Hoppenstedt Wirtschaftsverlag G.m.b.H., Essen (Ruhr), Germany. The Guide is a directory of suppliers of machinery, apparatus and precision tools and contains a register of products, trade marks, suppliers and manufacturers with relevant information and addresses. The cost is DM5. Copies are available in German, French, Italian and Spanish besides English.

NEW GRINDING AND DISPENSING MILL.—Claiming to reduce the milling time to one-tenth of that taken by the orthodox ball and pebble mill, Steel and Cowlishaw Ltd., Cooper Street, Hanley, Stoke-on-Trent, have introduced the Steel-Shaw "Smalls" Department Mill, Mark II. This mill is a larger edition of their laboratory Mark I model and has been designed to mill to a semi-paste consistency, grind materials wet or dry, and if necessary process four substances at the same time.

It is worked by clamping four pots into steel containers and rotating them at high speeds around a vertical steel shaft whilst at the same time each is spun in the opposite direction on its own axis. The total milling capacity is 10 gallons.

BUYERS GUIDE.—The 1955 edition of the Buyers Guide to plastics materials and machinery and equipment for the plastics industry has been published by the British Plastics Federation. The materials section of the guide has been divided into the various types of powders, resins, sheets, etc., each having the names of suppliers, the physical form of the material and the trade name. It is the first time that semi-processed materials such as sheet and tubing have been included.

The machinery section includes all types of compounding, fabricating and ancillary equipment.

A cross reference of trade names is also included.

ATOMS FOR PEACE.—A mobile exhibition sponsored by the United States Information Service, is touring Britain demonstrating the use of radioactive materials in many constructive applications.

SOFT-FLOWING POLYSTYRENE MOULDING POWDER.—The Technical Service Bulletin No. P.12, issued by Monsanto Plastics Ltd., of Victoria Station House, London, S.W.1, gives details of Lustrex Hi-flow 55 polystyrene moulding powder. This powder has been compounded primarily for mouldings of relatively thin sections or of intricate design, where difficulty may be experienced in filling the cavities with general-purpose polystyrene. The recommended moulding techniques, pressures, temperatures, and cycle times are given together with details of extruding, compression moulding, and other methods of fabricating. A list of properties is also given.

PERMALI/JABLO COMBINE.—Permali Ltd., announce that following negotiations with Jablo Plastic Industries Ltd., they have registered two new subsidiary companies. The first, Hydulignum-Jabroc (Tools) Ltd., at Hydulignum Works, Haddenham, Bucks, has been formed to carry on the design and manufacture of metal-forming tools and jigs for the aircraft and engineering industries.

The new company will combine the tooling businesses in laminated densified wood, metal and other materials formerly conducted by Hordern-Richmond Ltd., as a subsidiary of Permali Ltd., and Jablo Plastics Industries and Moulded Components (Jablo) Ltd. The re-equipment and extension of the Croydon works now proceeding will provide a substantial increase to existing capacity.

The second company, Jabroc Ltd., registered office and works, Mill Lane, Waddon, Croydon, Surrey, will continue the manufacture of "Jabroc" densified wood laminates, strictly in accordance with existing manufacturing specifications. Arrangements have been made for the completion of all open contracts placed with Jablo Plastics Industries and Moulded Components (Jablo) Ltd., and for the future sale of "Jabroc" material. The management of both companies is under the direction of Mr. J. H. Collins.

Plans have now been finalized by Permali Ltd., for setting up a factory in the U.S.A. This will enable "Permali" densified wood laminates to be more readily available throughout North America. The new factory will be built at Mount Pleasant, 32 miles south east of Pittsburgh, Pennsylvania, and production is expected to begin by the end of this year. The present location of the American subsidiary, Permali Inc., is 55 West 42nd Street, New York.

HOMUNCULUS AND CO.—The manufacture and sale of plastics mouldings, products and other materials at present carried out by Homunculus and Co., at its factory at Eythorne, has been transferred to the wholly-owned company S. P. Structural Plastics Ltd.

This newly-formed company takes over responsibility for all the technical, design and sales service which was provided by Homunculus and Co., and will maintain the same offices.

SUMMATING COUNTER.—The Horameter introduced by Target Services, 6-11 Dorset House, Gloucester Place, London, N.W.1, is designed to provide an accurate method of timing for different processes. It is worked by an electromagnet which winds up a clock mechanism at regular intervals. The mechanism only works while the electro-magnet is energized.

A part of the Celanese Exhibition.

CELANESE PLASTICS EXHIBITION.—British Celanese, Ltd., held an exhibition to illustrate the versatility of cellulose acetate plastics.

Demonstrations of vacuum forming of Cellastine sheeting and a display of Cellastine wrapping film formed part of the exhibition.

Reverse printed Clarifoil film for lamination to paper card and aluminium foil and examples of the laminates provided a colourful display while examples of rigid boxes in the thicker gauges indicated one use to which it is being put. The manufacture of continuous tubing from Clarifoil was demonstrated by spiral winding and on a straight seamed tube machine. Matt Clarifoil was introduced for the first time and makes an ideal erasable writing surface.

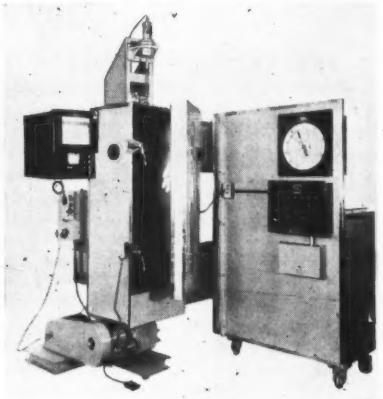
Celastoid sheet for spectacle frames and industrial safety goggles, vizors and machine guards, and some of its uses in the toy and packaging industries, were also shown.

DIRECTORS' REPORT.—The twenty-first report and audited accounts of John Dale, Ltd., were presented on June 29. These show a profit before taxation of £110,932, against £78,890 in 1953. The directors recommended a final dividend of 7½d. per Ordinary share.

WICKMAN, LTD., have acquired all the issued Ordinary capital of Arthur Scrivener, Ltd., machine tool manufacturers of Tyburn Road, Birmingham.

ELASTOMERIC MATERIAL TESTER.—To test rubber and elastomers at increasingly greater extremes of high and low temperatures, Scott Testers, Inc., Providence, R.I., have produced the "Model L-8" an improved tensile tester with a range of 620° F. The new Scott Model L-8 is designed for the determination of tensile stress (modulus), tensile strength, per cent. elongation, and resistance to tear of elastomeric materials at temperatures ranging from −70° to 550° F.

For convenience of operation and maximum versatility, this tester is furnished in two units: the testing instrument and the conditioner. The testing instrument consists of the standard Scott rubber tester mounted on a special frame equipped with hot-cold test chamber. The tester can be equipped with either a pendulum type weighing system or the more precise "Accr-O-Meter" electronic weighing system. The hot-cold conditioning unit is a separate and self-contained piece of equipment complete with both manual and automatic controls. It is designed to supply a sufficient volume of



The L-8 Scott tester.

controlled air to maintain the test cabinet at any required temperature from −70° F. to 550° F. The air is circulated by means of an electric fan through stainless steel ducts and an automatically controlled mixing manifold. Further information can be obtained from Scott Testers, Inc., 154 Blackstone Street, Providence, R.I.

MARCHING TO OLYMPIA!

Carrying the 45 ft. extruded polythene tube on a section of its journey to Olympia where it was shown on the stand of B.X. Plastics, Ltd.

NEW APPOINTMENTS.—Dr. C. Dannatt, O.B.E., M.C., managing director of Metropolitan-Vickers Electrical Co., Ltd., and Mr. O. W. Thesiger, deputy managing director of Associated Insulation Products Ltd., have been appointed directors of The Micanite and Insulators Co., Ltd.

ANNUAL HOLIDAY.—Birkbys, Ltd., announce that their works will be closed from 5 p.m. Friday, August 19, to 8 a.m. Monday, September 5.

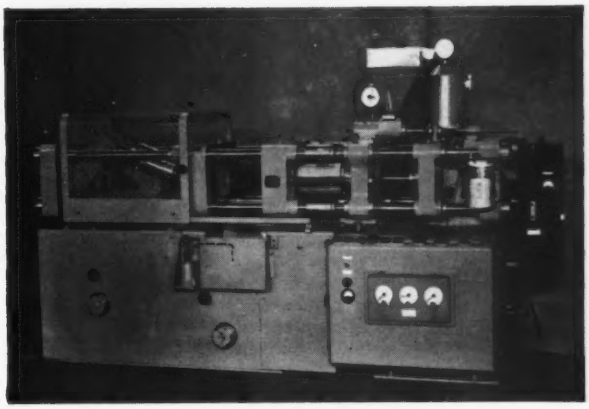
POLYVINYL ALCOHOL FILM.—A description of the Pevalon, polyvinyl alcohol film and its uses and also of Pevafix welding solvent has been issued by M. and B. Plastics, Ltd., 45-47 Wigmore Street, London, W.1.

CHANGE OF NAME.—W. Edwards and Co. (London), Ltd., the well-known firm of vacuum engineers have changed their name to Edwards High Vacuum, Ltd., the address remaining the same.

MOULDERS' PLANT CAPACITY.—The British Plastics Federation have given us their permission to publish the following summary of moulders' plant capacity for 1953 and 1954, based on the information collected annually by the Moulders' Group:—

	1953	1954
Compression Moulders ...	92	87
Injection Moulders ...	81	78
(a) Compression Moulding:		
Number of presses ...	3,489	3,303
Capacity of presses in tons	292,082	275,928
Analysis of figures:		
Up to 25 tons	968	1,131
„ 50 „	842	657
„ 100 „	1,145	1,057
„ 150 „	224	197
„ 200 „	102	60
„ 250 „	75	77
„ 300 „	17	19
„ 350 „	47	43
„ 400 „	9	4
„ 450 „	5	4
„ 500 „	18	18
„ 1,000 „	23	26
„ 1,500 „	11	4
„ 2,000 „	3	6
	3,489	3,303
(b) Injection Moulding:		
Number of presses ...	837	883
Capacity of presses in oz.	3,884	4,234
Analysis of figures:		
Up to ½ oz.	59	51
„ 1 „	114	108
„ 2 „	146	151
„ 3 „	132	149
„ 4 „	134	157
„ 5 „	11	10
„ 6 „	45	34
„ 7 „	4	—
„ 8 „	151	167
„ 12 „	6	14
„ 20 „	20	27
„ 32 „	7	7
„ 40 „	2	3
„ 50 „	3	2
„ 75 „	3	3
	837	883

Reifenhauser machine extruding rigid sheet



A view of the Battenfeld B.S.M./40S fully automatic injection-moulding machine.

MACHINERY DEVELOPMENTS IN GERMANY.—Amongst other news from Troisdorf, we received details of the 90 mm. Reifenhauser machine, shown above, extruding high-impact polystyrene sheet 48 in. wide. Known as the S90/RGV Reifenhauser extruder, the unit is powered by a 30-h.p. motor. Screw speeds are in two ranges, 9-34 and 17-63 r.p.m. An electro-magnet clutch is incorporated. The die head shown is in 12 sections, each capable of close adjustment, with band heaters along the top and cartridge heaters at either end.

Also shown above is the Battenfeld B.S.M./40S fully automatic injection-moulding machine. This has a gate injection device and a mould protecting mechanism. The shot capacity is 2 oz., maximum moulding area 31 sq. in., mould locking pressure 50 tons, mould opening stroke $7\frac{7}{8}$ in., maximum shots per minute 10. Overall length of the revised Battenfeld machine is 9 ft., and it is 3 ft. wide.

CORRECTION.—Appearing on page 198 of the June issue of *Plastics*, the description of the British Celanese stand at the B.I.F. stated that Cellastine acetate sheeting was being used in the manufacture of spectacle frames. This should have said that it is Celastoid being used in this application not Cellastine.

PLASTICS INDUSTRY EDUCATION FUND.—At their meeting on June 3, 1955, the trustees of the Plastics Industry Education Fund elected Mr. C. S. Dingley as chairman until the end of 1957. In accepting this office Mr. Dingley, on behalf of the other trustees, thanked Mr. P. C. Allen for his excellent work in starting the Fund in 1951 and as chairman of the trustees for the first three years. Dr. Yarsley was elected vice-chairman of the trustees.

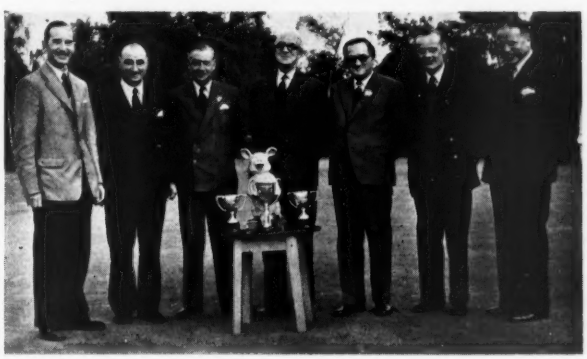
It was stated that the appeal issued in April to firms in the plastics industry for increased support for the Fund, with a target income of £10,000 a year, has so far met with a fairly encouraging response. The income of the Fund for 1955-56 may well amount to over £7,000, although many subscribers have not yet indicated whether they will be able to double their contributions, as suggested, and a large number of other firms have not yet replied to the appeal.

POLYTHENE BOTTLE PATENT.—British Patent No. 516262 relating to the blowing of polythene bottles and hollow articles has been extended by seven years, that is to July, 1961.

GOLFING WINNERS.—At a meeting of P.I.G.S. held at Sunningdale, on May 19, the F. A. Hughes Trophy (Stableford) was won by C. Parkinson (4) 33 pts.; runner up, R. P. Anderson (12), 31 pts. The Arrow Electric and Stuart Trophies (Stableford Greensomes) were won by L. W. McCabe (15) and R. G. L. Welham (24), 38 pts.; runners up C. Parkinson (4) and T. G. Brooke-Hitching (16) 34 pts.

At the meeting held at Coombe Hill, on June 21, for the Waghorne Trophy and the *Plastics* Goblets, the results were: Waghorne Trophy (Stableford), winner, R. Anderson (12) 41 pts.; runner up, R. Johnson (7) 35 pts.

Plastics Goblets (Stableford Greensomes): winners, F. Garrett (5) and J. Hyde (17), 37 pts. Runners up, C. W. Thomas (11) and W. Bond (12) 35 pts. (decided on last nine holes after a tie).



Presentation of the *Plastics* Goblets and the Waghorne Trophy at Coombe Hill. Left to Right: Mr. Ray Johnson, Mr. Frank Garrett, Mr. Roland E. Dangerfield, Mr. Charles Waghorne, Mr. Cyril Last, Mr. John Hyde and Mr. Ralph Anderson.

PRODUCTION OF VINYL ACETATE MONOMER.—British Celanese, Ltd., announce that a plant for a substantial production of vinyl acetate monomer is now under construction at their Spondon works. The plant is designed to operate a process, developed by the Celanese group of companies, starting from acetaldehyde and acetic anhydride. These materials are already produced in adjacent plants in very large quantities from products of the company's oil-cracking installation.

INCORRECT PHOTOGRAPH CAPTION.—The photograph appearing on page 141 of the May issue of *Plastics* showing p.v.c. beer hose was taken at the B.X. Plastics Ltd., Social Club, and not as stated at their canteen.

NEW APPOINTMENT.—Mr. J. M. White has been appointed to the London office of George Kent Ltd., and Mr. J. Tham has been appointed chief sales engineer in his place.

PRICE REDUCTON.—A reduction in the price of Stearine of £5 per ton has been announced by Price's (Bromborough) Ltd., Bromborough Pool, New Ferry, Near Birkenhead.

E. K. COLE, LTD., announce a net profit for the group after providing for depreciation and taxation of £304,779 against £181,332 last year. The final dividend of 10% and interim dividend of $7\frac{1}{2}$% are paid on a capital increased to £838,150 as against the total distribution for last year of $27\frac{1}{2}$% on capital of £294,075.

POLYESTER RESIN HANDBOOK.—Published by Scott Bader and Co., Ltd., of Wollaston, Wellingborough, Northants, the Polyester Handbook incorporates the latest information on their newest polyester resins as well as further data on processes and design considerations.

TALKING SHOP . . .

Developments with British Celanese. I read with great interest in the *Daily Telegraph* for June 22, Mr. G. H. Whigham's statement, to be presented at the 36th Annual General Meeting of British Celanese, Ltd., on July 14.

He had something to say about the company's new material, "Tricel," based, as Celanese, on cellulose acetate, but containing tri-acetate. The object of the new fibre is to duplicate the good properties of the traditional Celanese material but in addition to feature such items as permanent pleating, embossing, crease resistance and to generally counter the attractive properties of the truly synthetic fibres. I imagine that British Celanese technologists and chemists have had some hefty problems to solve with this material; the opinion has been very widely held in the industry for many years that tri-acetate was a particularly difficult substance to prepare and all credit must go to Celanese for solving the problems that must have arisen.

Another interesting comment in Mr. Whigham's statement, concerned the erection by Celanese of a plant for the production of vinyl acetate monomer. The process has been developed by the company and uses raw materials manufactured by Celanese on a large scale. Although immediately outside the textile field, vinyl acetate, of growing importance in the paint, adhesives and plastics industries, must be a welcome addition to the range of the company's products.

* * *

Glass-fibre Reinforced Plastics. *The Times Review of Industry*, for June, featured in its technical section an article by a special correspondent on glass-fibre reinforced plastics. The subject matter was presented in a particularly satisfactory manner, assuming on the part of the reader, no knowledge at all either of plastics or of glass. To the layman, anxious to keep abreast of current technical developments, this article will undoubtedly have been of great value. It brought to mind a recent announcement by the British Racing and Sports Car Club on the subject of a 10-lap race and a Concours d'Elegance to be run on October 9 at Brands Hatch, specifically for competition cars with glass-fibre reinforced plastics bodies. Over £500 in prize money has been donated to the Club for these events by Fibreglass, Ltd.

* * *

Polythene Fittings for Polythene Tube. A note has just been published by Imperial Chemical Industries, Ltd., on a new and simple method of jointing polythene tubes both for cold-water services and for general purposes. A provisional patent has been taken out for this fitment which is also made in polythene and which conforms to the various clauses of B.S. 1972 and 1973. The units are neat, light and easily installed and there is no restriction of the bore. The following types will shortly be available in ½-in., ¾-in. and 1-in. nominal bores for normal and heavy gauge Alkathene tubes: straight couplings, bends, tees, reducers and adaptors.

* * *

Overseas Visitors to B.I.P. A highly successful venture which took place during the Exhibition was a conference in Birmingham of the overseas agents of B.I.P. Brought together at the Exhibition time, the agents were taken up to Birmingham, were able to tour all of the factories, and were addressed by the managing director, Mr. C. H. Glassey. A specially printed booklet itemizing the various stages of the conference, and also giving a very clear picture of the work of the company, was specially prepared. This was of great value and the conference as a whole not only cemented good relationships between the agents and their parent organization, but also did much to encourage the company's representatives abroad in their work.

* * *

An Engineer on Plastics. I was talking the other day to a particularly well-informed specialist on plastics who had had his background in the engineering industry. He expressed a point of view which, although somewhat alarming, sounded dangerously near to the truth. In effect, he maintained that the plastics industry has received its major impetus from raw-material manufacturers, as a result of which the industry as a whole has tended to look at its problems in the light of atomic structure rather than in terms of engineering technology. He compared the plastics industry with the metal-working industry where, although knowledge of the structure of metals is not anything like as advanced as in the plastics industry, "know-how" on fabricating techniques, processing, etc., is far and away greater. Notwithstanding the relatively short history of the plastics industry when judged against its elder brother, it may well be true that we have got too used to the idea of thinking of the chemical structure of the material to the exclusion of technical methods of processing it.

* * *

Tom Driberg on Plastics. The issue of *Punch* which appeared during the second week of the Exhibition contained a most amusing account of a visit made to Olympia by Mr. Tom Driberg, M.P. for Maldon, Essex. Perhaps his funniest comment, because it could so easily have been true, was his account of a visit to one of the stands of our biggest moulders, where he was received by a most efficient salesman who proceeded to describe the uses of the various products on the stand, concluding by "And this is a moulding of which we are particularly proud, but I'm damned if I know what it's for."

* * *

Swedish Delegation to Britain. Leading a party of 23 of his countrymen to Britain was Jan Erik Janson, secretary of the Swedish Plastics Federation, and an old friend of many members of the British plastics industry. Mr. Janson spoke very warmly of the trouble taken by the British plastics industry to show the members of his delegation around their factories and plants, and before returning to Stockholm via Paris reported favourably upon the reactions to the visit on the part of his fellow countrymen.

* * *

Vacuum Forming Coming Up. One of the visitors to the Plastics Exhibition described vacuum forming as "an international sickness." As a visitor from abroad, we may safely assume that he referred only to the beneficial effects of this epidemic. Certainly both exhibitors and visitors from abroad showed great interest in the process, and I was very pleased to learn of the commencement of manufacture at Stroud, by Erinoid, Ltd., of the styrene sheet suitable for vacuum-forming purposes. Without in any way criticizing the value of p.v.c. and cellulose acetate, it is a fact that, particularly in America, styrene sheet has provided a new impetus to vacuum forming and an extension of applications suitable for its products.

Also of interest is news that Edwards High Vacuum, Ltd. (formerly W. Edwards (London), Ltd.), are to manufacture in this country the Formvac machine, under licence from the Swiss firm Hydro-Chemie. Mr. Patrick Sauter, of Hydro-Chemie, Ltd., very closely concerned with the development of the Formvac machine, was a visitor to London during the Exhibition.

* * *

Students Hear About Plastics. A very popular lecture was given to students at the National College of Rubber Technology, by Miss Elizabeth Sleigh, of I.C.I.'s Terylene Council. Dealing briefly with the historical background and methods of manufacture of Terylene, Miss Sleigh proceeded to dazzle her audience with the properties of this fibre. There can be no doubt that lectures of this kind do not merely sell their company's products, they do a very great deal to enlighten the layman as to the technical mysteries of synthetic fibre production.

* * *

Plastics Institute Section Vice-Chairman. At the recent meeting of the London Section of the Plastics Institute, Mr. Philip Morgan, Editor, *British Plastics*, was elected Vice-Chairman for the year 1955/56.

PLASTIKON.

PATENT REVIEW

The following abstracts have been made from specifications at the Patent Office, with the permission of the Controller of H.M. Stationery Office. The country of origin for Convention Applications is shown in parentheses. Complete specifications can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, price 3s. 0d. each (including postage).

B.P. 725,877. Vent sealing means for feeding-bottle nipples. Y. H. Kurkjian.

With a vent controlling ring, e.g., of flexible or semi-flexible plastic.

B.P. 725,882. Closures for containers made of plastic. E. K. Jänaker.

The container is provided with a projecting sealing ridge which, when the container is closed, engages the inner surface of the flange of the cover over a bead in the interior of the flange. Container and cover are each a one-piece plastic moulding.

B.P. 726,747. Box or container for adhesive bands or plasters. To: Laboratoires de Recherches et d'Applications Pharmacologiques (France).

B.P. 726,790. Methods of making binding agents of phenol-formaldehyde resins for mineral-wool, e.g., glass or slag-wool. To: A.G. der Gerresheimer Glashüttenwerke vorm. Ferd. Heye (Germany).

The phenol-formaldehyde resin contains sodium or potassium hydroxide, to which an ammonium salt of an acid (ammonium sulphate) is added.

B.P. 726,792. Polymeric materials. J. D. Burnett. To: I.C.I. Ltd.

Refers to the incorporation of an ultra-violet light absorber, a 4-alkoxy-2-hydroxy-benzophenone, to prevent ultra-violet light rays causing deterioration to food.

B.P. 726,847. Toy figures having an imitation walking movement. H. Muller (Schreyer and Co.) (Germany).

B.P. 726,885. Welding electrodes for high frequency electric sewing machines. S. Yamaguchi.

Intended for high-speed welding of thin sheets or cloth of vinyl and other plastic synthetic resins without danger of splitting the sheets. An upper solid metal roller electrode is fitted to the machine in place of a needle. A lower elastic deformable electrode is arranged to be driven by a driving shaft of the machine.

B.P. 726,892. Feeding of powdered or granular materials. E. J. Upton. To: British Celanese, Ltd.

The material flows down a passage where it is subjected to the intermittent action of an oscillating member to effect a movement of the boundaries encouraging the flow of material.

B.P. 726,896. Closures for containers. K. A. Robinson.

A cap-like closure made from a liquid moulding composition ("Corvic" as main ingredient) introduced into a rotating mould.

B.P. 726,921. Containers for toilet articles in stick form. M. B. Hailes. To: Unilever, Ltd.

A hollow cellulose acetate body and spacers to locate a lipstick refill for transfer to the container.

B.P. 726,922. Industrial protective clothing. T. H. Ashley, G. Gee. To: James North and Sons, Ltd.

Gloves of knitted cotton with an outer layer of polyvinyl chloride. To hold extra coating material, the base fabric has a plurality of loops.

B.P. 726,943. Lavatory or like brushes. R. Glanvill, P. J. Wise. To: R. Glanvill.

B.P. 726,949. Composite or laminated sheet material. P. J. Hunt.

Two webs of paper, cardboard, metal foil, woven textile or other material are passed between the nip of a pair of rollers while a polythene ("Alkathene") film is extruded above the nip to be sandwiched between the two webs. The travelling rate of the webs exceeds the extrusion speed. At least one web is preheated.

B.P. 726,958. Variable electrical capacitors. L. J. Sperry. To: Globe-Union Inc.

A thermosetting plastic "Plaskon No. 420" is mentioned, which will compression mould at temperatures not in excess of 350 deg. F. so that the ceramic dielectric may be moulded into the supporting member without disturbing the characteristic of the dielectric.

B.P. 726,961. Stencils. G. H. Smith. Comm. from: Filler and Fiebig G.m.b.H.

A plastic (transparent) stencil strip with parallel metal edges (slit extruded tubes).

B.P. 726,966. Manufacture of mechanical bindings for loose leaves. C. D. Trussell.

Refers to the formation of finger-forming portions alternately connected with the opposite ribs from plastic stock preferably obtained by extrusion.

B.P. 726,971. Pressure compensator for simultaneously pressing a plurality of bodies of powdered or plastic substances. M. Harms. To: Nitroglycerin Aktiebolaget.

B.P. 726,981. Mould for injection moulding the neck end of a tube onto the body of a tube. Uni-tubo SA, A. Quinche, E. Lecluyse.

A casing encloses at least one control member sliding in opposition to springs. When the member is shifted by a ram the springs are stressed and the two mould sections move towards each other. The sections move automatically apart when the control member ceases operating.

B.P. 727,003. Spectacles. R. W. J. Franklin. To: Raphael's, Ltd.

Detachable decorative members in form of separate elastically expansible rings and/or segments, e.g. of plastic material.

B.P. 727,054. Domestic articles having handles. M. Groetsch (Germany).

A two-part shell as shaving brush container which can be used as handle.

B.P. 727,104. Apparatus for extruding a plastic sheath around an electric conductor. To: Standard Telephones and Cables, Ltd. (U.S.A.).

The extrusion die has a long tapered axially extending channel in which a long tapered tip is disposed. The tip is provided with internal heating means. Thus the plastic material such as polymonochlorotrifluoroethylene, which has extremely critical temperature ranges, is doubly heated in its travel along the tapered passage.

B.P. 727,143. Pile fabrics. H. Ewing. To: British Celanese, Ltd.

A knitted fabric is provided with a sticky coating that can be hardened. A flock of fibres is projected with their long axes perpendicular to the adhesive surface (by electrostatic means) and embedded in the adhesive which is then hardened. Useful for covering three-dimensional shapes.

B.P. 727,163. Fireproof fabric. A. D. Clarke. To: Commercial Plastics, Ltd.

Hessian is impregnated with a fireproofing agent, then coated with a waterproofing vinyl chloride polymer (co-polymer) composition comprising a fire plasticizer and an after-glow suppressant.

B.P. 727,251. Closures. L. J. Moncrieff. To: British Celanese, Ltd.

For (toothbrush, pencil, etc.) containers of transparent plastics. A flat rubber ring is sandwiched between two rigid plastic discs one of which is flanged. The discs are joined by a central stem on one disc fitting into a hole on the other disc.

B.P. 727,252. Electric devices employing semi-conductors. S. C. Shepard. To: Standard Telephones and Cables, Ltd.

The semi-conducting crystal and the electrodes are embedded in a solid thermosetting compound by a method adapted for very small and very robust devices.

B.P. 727,262. Adhesive compositions. J. A. Ross. To: Bakelite, Ltd.

An aqueous urea-formaldehyde resin and a filler of powdered cereal chaff or powdered straw.

B.P. 727,313. Method of bonding. W. S. Penn, E. R. Thornley. To: Henley's Tyre and Rubber Co., Ltd.

Refers to the bonding of a cellulose ether or ester window to the rubber main body of a respirator or a helmet.

B.P. 727,321. Coated flexible sheet materials. To: Farbenfabriken Bayer A.G. (Germany).

Artificial leather is made by coating a backing (textile or plastics) sheet with at least one porous blown layer prepared from condensation products of polyesters and di- or tri- isocyanates.

B.P. 727,330. Light fitting primarily for vehicle interiors. D. J. Battersby.

Base and dome or bowl are formed by one and the same clear (translucent) plastic moulding.

B.P. 727,347. Knitting needle. L. Spencer.

With metal shanks and plastics heads.

B.P. 727,348. Container syringe and method of filling same. To: A. M. Bickford and Sons, Ltd. (Australia).

B.P. 727,355. Method of production of lamp shades. Valentine and Sons, Ltd., G. Rogerson.

The shade has apertures through which metal discs are welded to the frame.

B.P. 727,364. Trays and the like and fitments therefor. J. Mendle.

A clamping device for securing the tray to an arm-chair. The device may be moulded fixed to the tray.

B.P. 727,373. Insulated electrical conductors. To: General Electric Co. (U.S.A.).

To prevent loosening of the (tetrafluorethylene) sheath from a copper conductor, a nickel layer is applied over a rough copper surface as a shielding coat.

B.P. 727,377. Electric lamp holder. R. Figueiredo (Australia).

An angularly adjustable holder the

component parts of which are few and readily moulded from thermoplastic material.

B.P. 727,384. Holders for jars. J. R. T. Bishop, D. E. Swanson. To: International Minerals and Chemical Corp.

B.P. 727,393. Compositions for making thermoplastic sheet materials and other moulded products. L. H. Griffiths, W. Saul. To: Semtex, Ltd.

For making sheets for flooring from polyvinyl compounds, plasticiser and a flock of fibrous material. The flocculent mass is anchored to the polyvinyl compound without effecting coalescence of compound and plasticizer to a homogeneous mass.

B.P. 727,412. Display plate and method of manufacturing the same. J. Stewart, T. S. Jardine.

A sheet of thermoplastic transparent material is pressed against an ornamental sheet of metal foil which carries the device or legend previously embossed between heated representations. The transparent sheet, the ornamental sheet and a backing sheet are then bonded together.

B.P. 727,414. Production of moistureproof sheet wrapping materials. C. R. Oswin, R. A. Rose. To: British Cellophane, Ltd.

B.P. 727,416. Tie racks. J. S. Corby.

To be disengaged from a hook by swinging the rack upwards.

B.P. 727,417. Battery separators and method of preparation thereof. C. Popper, H. D. Wilson. To: Auto-Lite Battery Corp.

Made of natural or cellulose fibres or granules bonded together.

B.P. 727,438. A liquid level. A. Wullschleger (Switzerland).

Made of transparent plastic material.

B.P. 727,468. Building boards. C. G. F. Cavadino, F. E. Strable, Gyproc Products, Ltd.

Waterproofing treatment for gypsum plaster boards by impregnating the liners with a solution containing urea formaldehyde resin.

B.P. 727,470. Process for forming adherent polyethylene coatings on metal surfaces. J. S. Heisler, A. Heisler (U.S.A.).

Ethylene polymer powder is applied to the heated metal surface and pressed towards and along this surface.

B.P. 727,479. Separable-fastener tapes. G. Waldes. To: Waldes Koh-I-Noor Inc.

Adapted to fasteners for handbags, purses, etc., of very thin thermoplastic material of a thickness not exceeding 0.006 in. The tape has a closely woven zone carrying the fastener elements and a loosely woven zone along its edge which is made of thermoplastic material. This zone ensures a strong bond with the material of the article when heat and pressure is applied.

B.P. 727,502. Electric pick-up for gramophones. D. Pannell.

The armature holder is preferably of plastic material.

B.P. 727,529. Closures for jars, bottles, or similar containers. J. M. Jackson. To: Metal Box Co., Ltd.

A metal cap with a skin of polyvinyl chloride. The skin is produced by a moulding operation in the cap.

B.P. 727,548. Receptacle for atomiser or the like. To: Elizabeth Arden, Ltd. (U.S.A.).

The container is moulded of a resiliently flexible plastic material with transverse accordion pleats and has a flexible tube inside leading to the discharge opening through which the powder is ejected on compression of the container.

B.P. 727,552. Clothes peg. L. M. G. Olivier.

May have a plastic body.

B.P. 727,566. Production of polyester resin materials. W. I. Weaver. To: Allied Chemical and Dye Corp.

B.P. 727,570. Bonding of vinyl chloride polymers to fibre-forming materials. A. H. Gentle, T. Jackson. To: British Celanese, Ltd.

B.P. 727,591. Treatment of fabrics and articles made therefrom. J. G. Evans, G. Landells, B. E. Screeton, J. M. Holmes, G. C. Rogers. To: Bradford Dyers' Association, Ltd.

A multi-ply assembly having an interliner (resin-impregnated, thermoplastic fibres containing adhesive polythene film) is bonded and compressively shrunk in a single operation by heat and pressure.

B.P. 727,598. Compositions suitable for the production of prints, and the like which are fast to moisture. To: Badische Anilin- and Soda-Fabrik (I.G. Farbenindustrie A.G.) (Germany).

B.P. 727,606. Manufacture of fountain pen and like caps. E. V. Wagner.

An injection mould for forming the cap with an integral clip from, e.g., cellulose acetate or polystyrene.

B.P. 727,650. Process for printing and padding textiles. To: Farbenfabriken Bayer A.G. (Germany).

A textile printing paste based on a copolymer of vinyl chloride, acrylonitrile, a thickener, and a pigment dyestuff.

B.P. 727,657. Manufacture of laminated, resin-impregnated hollow articles such as boat-hulls. D. Salisbury-Green.

A doubly-curved form is built up, on a mould shaped externally to the internal form of the hull, of a plurality of layers of sheet material impregnated with a thermosetting resin. Each layer is made up of a number of pieces and has a coating of a thermosetting synthetic resinous adhesive. The mould with the built up hull is placed in an oven to cure impregnant and adhesive at low temperature and pressure.

B.P. 727,679. Manufacture of micro-porous material. E. M. O'C. Honey, C. R. Hardy, F. Sharp. To: Pritchett and Gold and E.P.S. Co. Ltd.

Fine particles (starch) are incorporated in a thermoplastic material (polyvinyl chloride) with the help of a solvent (methylcyclohexanone). The "dough" is extruded as a sheet, and calendered before or after removal of the solvent, but before removal of the fine particles.

B.P. 727,801. Resinous compositions. F. S. Deutsch, F. R. Smith, H. J. Pratt. To: British Resin Products, Ltd.

Pearlescent surfaces are obtained from a moulding composition comprising bismuth oxysalicylate incorporated in a cellulose or polystyrene resin, or bismuth oxycarbonate in a polystyrene resin or in a phenol formaldehyde resin.

B.P. 727,825. Transfer paper and dry-strip transfers made with such paper. N. Edge. To: Brittains, Ltd.

Has a carrier film of translucent flexible polyethylene or of a similar composition.

B.P. 727,844. Composite assemblies for use in reinforcing portions of sheet material and for use in bonding portions of sheet material together. M. Seymour. To: B. B. Chemical Co., Ltd. (U.S.A.).

An assembly for vinyl resin sheets to reinforce a portion against tearing or for bonding two sheets together is made in three steps (a) depositing a film of a non-tacky activateable adhesive in solution on a supporting surface, (b) evaporating the solvent, (c) pressing a thin flexible sheet of plastics against the exposed surface of the adhesive film.

B.P. 727,852. Coloured cellulose derivate textile materials and films. To: Celanese Corp. of America (U.S.A.).

Acid-fading resistance is improved by a content of N : N'-di (2-chlorophenyl)-ethylene-diamine.

B.P. 727,876. Foldable desk. K. W. Couse.

A frame of metal and plywood and flexible covers of a synthetic resinous substance resistant to bending or cracking under pressure.

B.P. 727,905. Key mounting for accordions. T. Link (Switzerland).

A single member provided with all the knife edges and securing devices may be pressed, cast, injection moulded or otherwise manufactured from metal or synthetic material.

B.P. 727,933. Fused fabric assemblies. L. Bihaly. To: Trubenised (Gt. Britain), Ltd.

The interlining is, or contains, strands of a material which, while solid at normal temperatures, melts below the maximum to which the other constituents can safely be subjected. No plasticizer (solvent) is therefore required for fusing the plies under heat and pressure. Polythene (polystyrene, etc.) have been found satisfactory.

B.P. 727,942. Rivet. J. de Swart (U.S.A.).

A pulling force is used to set the rivet, which as an insulating rivet may be made of nylon, vinyl or acrylate resins or similar materials.

B.P. 728,001. Illuminating devices. N. L. Whiteley.

A lamp with a rotating cylinder for advertising purposes. Use of translucent plastics for the outer wall.

B.P. 728,025. Apparatus for the production of plates, sheets or tubes of thermoplastic materials having stripes of two or more colours. Plastar S/A Comercio e Industria de Materiais e Produtos Plasticos, G. Tedeschi (Brazil).

A die is divided into several horizontal superposed disc shaped chambers. Each chamber receives differently coloured material from an equal number of extrusion presses. The materials are fed from the chambers in juxtaposition to the moulding die part.

B.P. 728,029. Stabilized halogen-containing vinyl and vinylidene resins. To: Monsanto Chemical Co. (U.S.A.).

The stabilizer is, e.g. a cadmium monocyclohexyl maleate. Films may be formed without the formation of haze.

B.P. 728,034. Moulds and moulding presses, particularly for moulding artificial teeth. J. Steel-Maitland.

Each mould section is provided with a passage for circulation of a cooling or heating medium and a vertical inlet and outlet in the upper face of the section at opposite sides.

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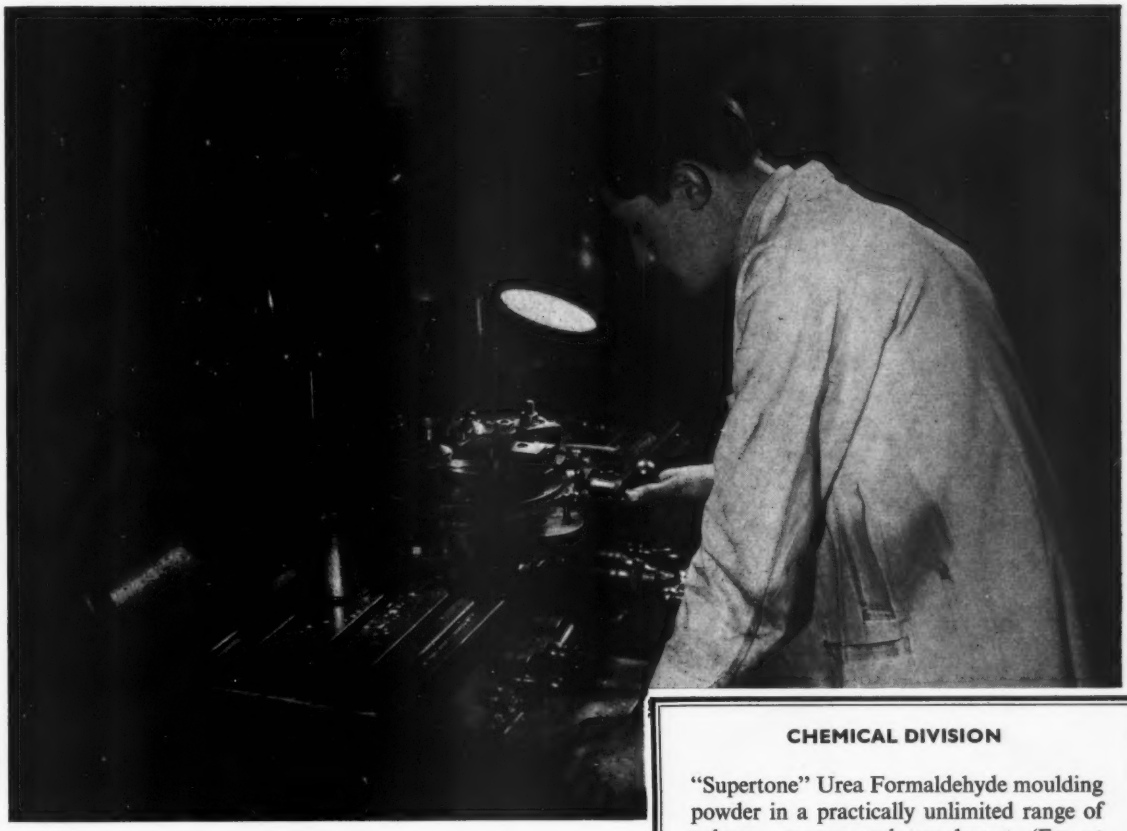

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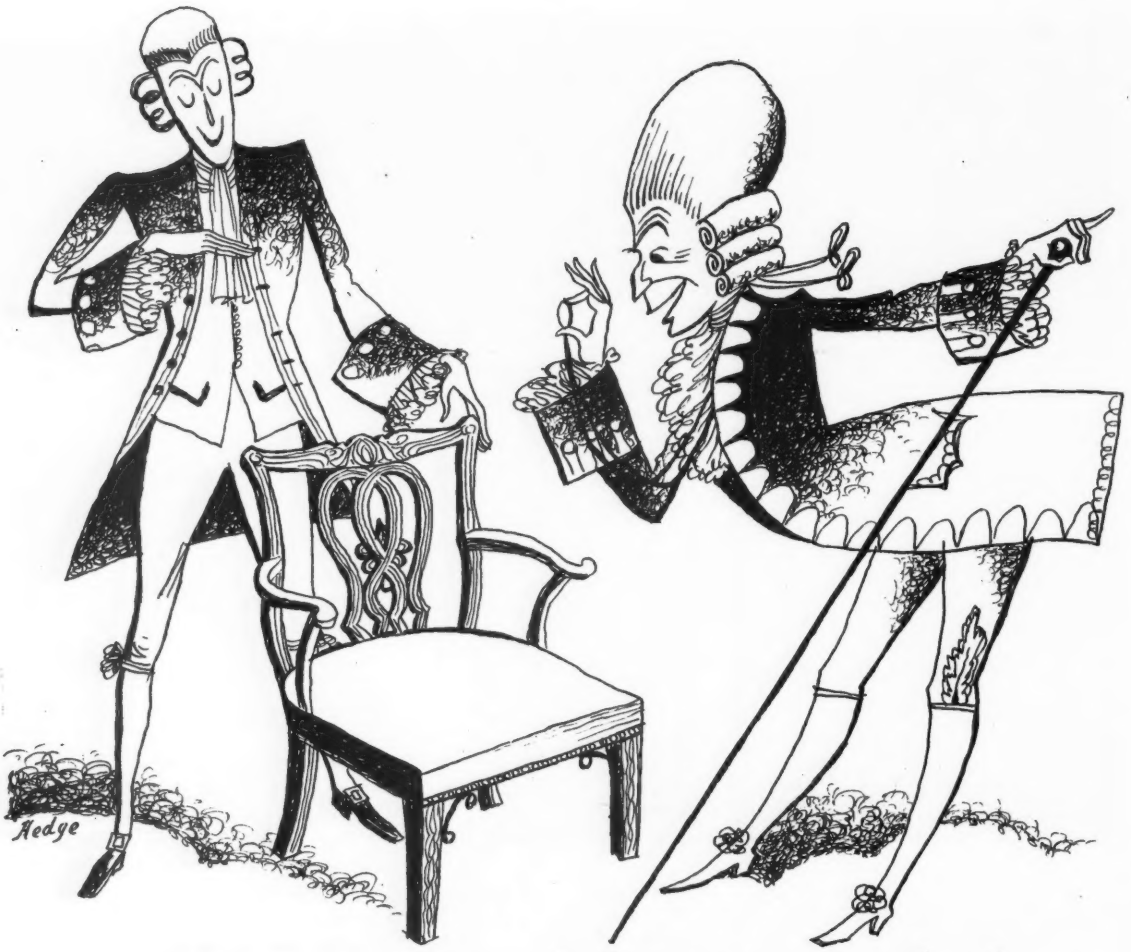
This Division specializes in the manufacture of plant and of media for modern barrel-finishing processes for the plastics and metal industries. It has its own physical laboratory, where samples can be processed, and is supported by a Technical Advisory Service.



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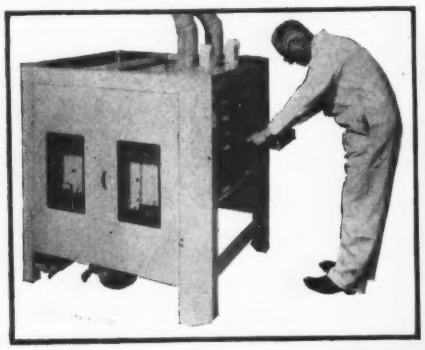
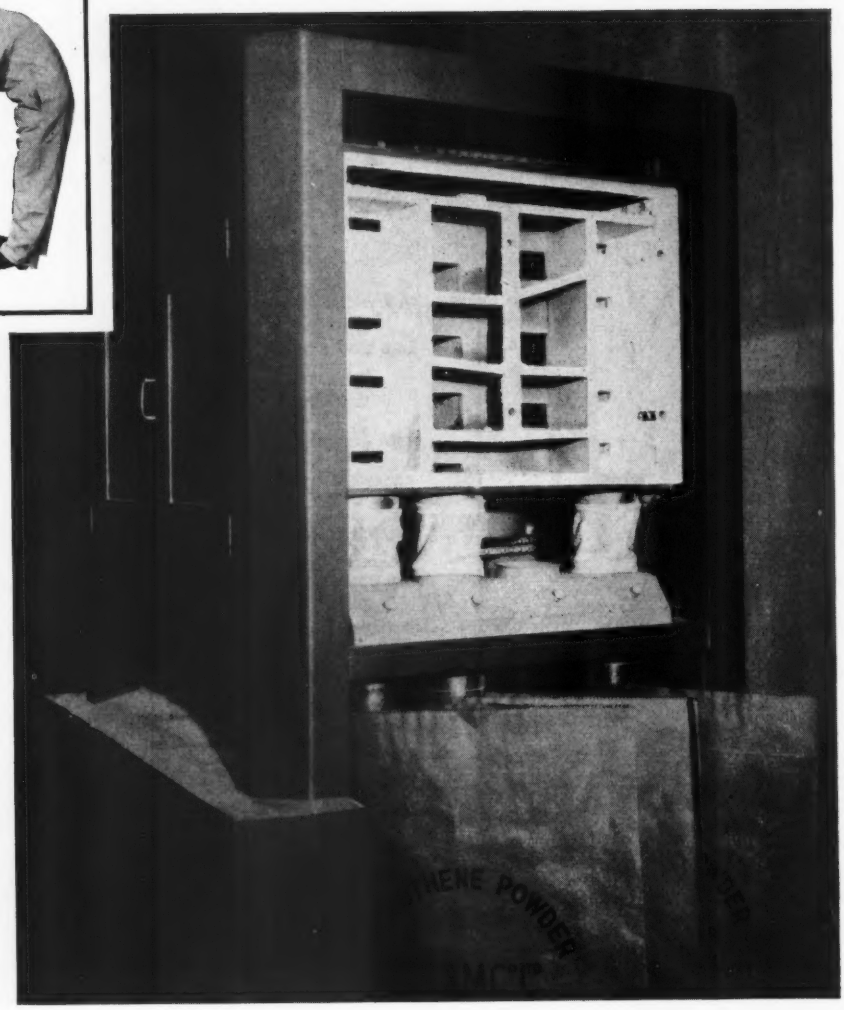
SIMPLIFIED, HIGH SPEED SIFTING OF MOULDING POWDERS with the Simon Junior Sifter





This Junior Sifter, installed at T. C. & M. Co. Ltd., has the side cover removed to show the internal sieving arrangement.

For trouble-free sifting of moulding powders, the Simon Junior Sifter will take a lot of beating. Big names in the plastics industry including Telegraph Construction and Maintenance Co. Ltd., find that Junior Sifters are ideal machines for high-capacity screening, grading and sifting.

The powerful rotary motion of the horizontal sieves gives positive separation with absolutely dust-free operation. Junior Sifters can be fitted with mechanical feeders or they can be incorporated into your existing processing system. Let us talk to you now about your sifting problems.

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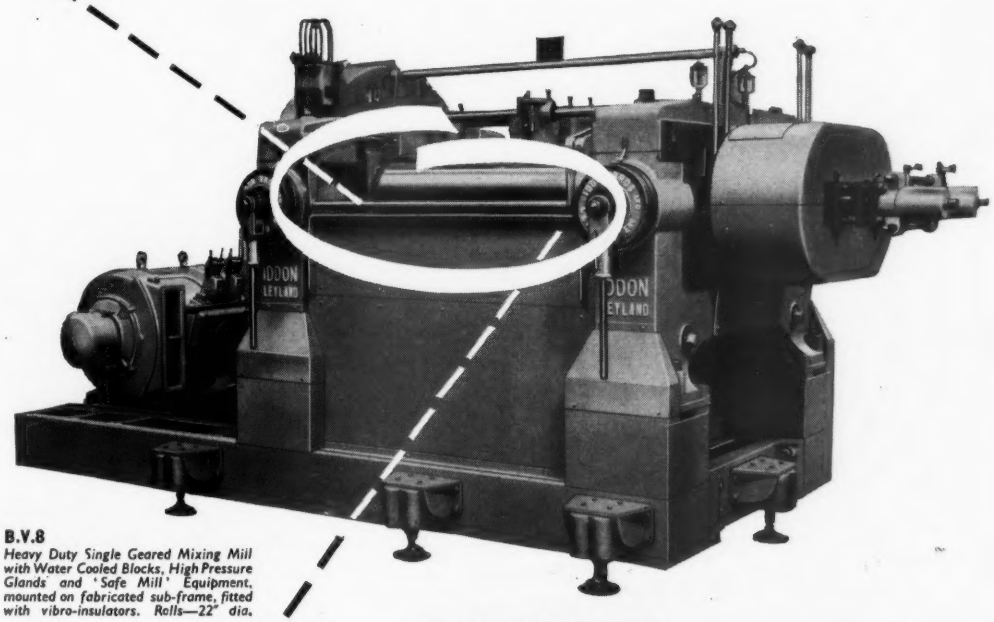
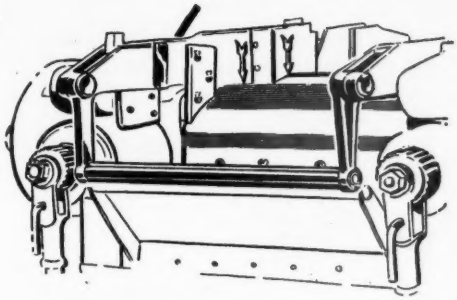
2 OUTSTANDING FEATURES

Lunn Safety Device *Vibro Insulators*



B.V.8
Heavy Duty Single Geared Mixing Mill with Water Cooled Blocks, High Pressure Glands and 'Safe Mill' Equipment, mounted on fabricated sub-frame, fitted with vibro-insulators. Rolls—22" dia.

SAFETY — KEYNOTE OF PRODUCTION



B.R.9
Single Geared Mixing Mill fitted with 'Safe Mill' Equipment Rolls—16" dia. × 40" Face.

1 **Lunn Safe Mill Equipment, protects the operator.**

2 **Vibro Insulators not only protect the machine but solve many problems of installation.**

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"GENITRON" B.S.H. Excellent blowing agent, particularly for rubber. The residue after blowing is compatible with rubber, is non-staining, non-toxic, odourless, and colourless.

"GENITRON" O.B. Suitable for expanding rubber and plastics, particularly vinyl plastics such as P.V.C. Open or closed cells can be produced as required. The polymeric residue is inert, non-toxic, odourless, colourless, non-staining, and insoluble.

"GENITRON" A.Z.D.N. Suitable for expansion of P.V.C., natural and synthetic rubber. Produces fine, uniform pores. Does not discolour or harm rubber.

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In every industry or trade, electrical equipment is the key to modern production methods. There are probably more production-boosting and money-saving devices than you know of. Your Electricity Board can help you and give you sound advice.

They can also make available to you, on free loan, several films on the uses of electricity in Industry — produced by the Electrical Development Association.

E.D.A. are publishing a series of books on "Electricity and Productivity". Four titles are available at the moment; they deal with Higher Production, Lighting, Materials Handling, and Resistance Heating. The books are 8/6 each (9/- post free) and the Electricity Boards (or E.D.A. themselves) can supply you.

Individual Drive

Individual drive means power exactly where it is wanted. The motor is built into the tool and direct coupled to the driven shaft. Efficiency is higher, floor space is saved, belts are done away with. The machine is a self-contained unit and the drive is direct. There are no gears, no belts—so maintenance is low.

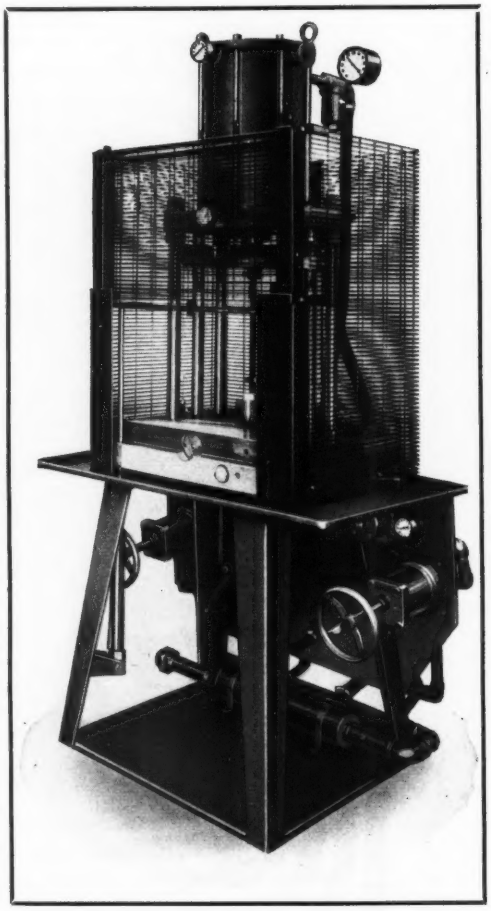
Individual drive means that the motor is tailored to the tool—control is simplified and there is no waste of power. The tool does the work at the highest speed and the lowest cost: lowest in maintenance, lowest in rejects, lowest in power consumption. Putting the power where it is wanted is—

only one of the aids to higher productivity that Electricity can bring you.

Electricity a Power of Good for PRODUCTIVITY

The British Electrical Development Association, *2 Savoy Hill, London, W.C.2*

A new Alkyd Press



Very fast — designed specially to take full advantage of the fast curing properties of the powder.

Semi-automatic — the act of charging the die closes the guard and starts the moulding cycle.

Fully adjustable — including the lowering pressure of the platen; the position where the full moulding pressure is applied; the speed and closing pressure of the guard; the duration of the cure and the daylight.

Completely interlocked — the platen will not move down until the guard is closed and locked.

Up-to-date — designed by E.M.B. Co., Ltd., in collaboration with the well-known moulders, Messrs. Derwent Plastics Ltd. of Stamford Bridge.

CAPACITY	
Max. force of platen	5 tons
Max. stroke of platen	12"
Max. daylight	18"
Distance between tie bars	16"
Ejection force	1½ tons
Max. stroke ejection plunger	4"
Max. curing time	60 secs.

E.M.B. Co. Ltd.

WEST BROMWICH——ENGLAND

OUTSTANDING AT THE EXHIBITION

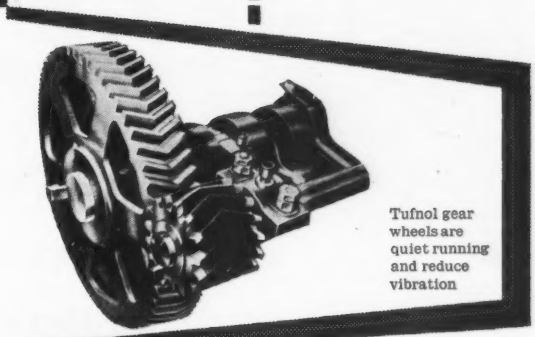
TUFNOL

IF YOU VISITED THE EXHIBITION,

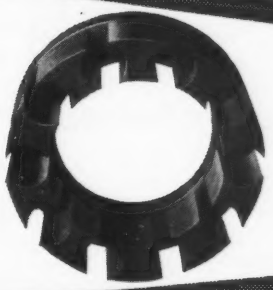
the TUFNOL stand will have caught—and held—your attention. You will have noted the extraordinary properties of TUFNOL—its exceptionally wide range of uses from gear wheels to boat fittings, its unique advantages as a non-corrodible material and as an electrical insulator specially suitable for mechanical service.

EVEN IF YOU MISSED THE EXHIBITION,

you will be aware that the name TUFNOL is synonymous with the most hard-wearing and durable components for an outstanding variety of uses.



Tufnol gear wheels are quiet running and reduce vibration



Tufnol is used with advantage for a wide variety of machinery parts.

Tufnol can be supplied as an electrical insulator to meet appropriate specifications.

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Under Licence Agreement

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PLASKON TYPE ALKYD MOULDING POWDERS

is now in bulk production in Britain

THIS IS THE RANGE

ALKYD MOULDING POWDER	411 PUTTY
	417 Putty self extinguishing
	420 GRANULAR
	422 Granular self extinguishing
	440A. Glass filled, self extinguishing

Plaskon Alkyd Moulding Materials were originally developed with outstanding success for high voltage electrical insulation work in the U.S.A. Resinous Chemicals Limited now manufacture these materials under licence in England.

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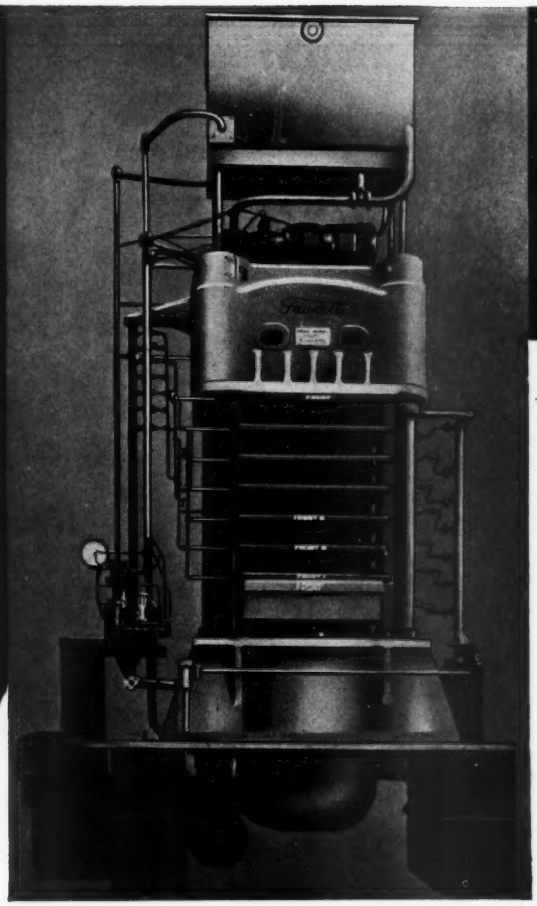

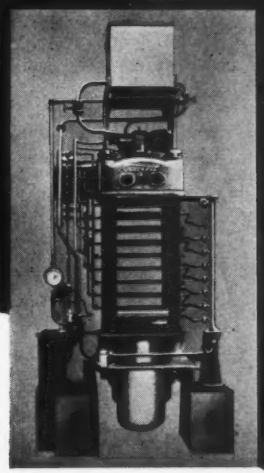

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Specially designed for the manufacture of brake linings, this 2,000-ton upstroking press has a self-contained motor-driven pump and oil reservoir.

specialists in press design and construction

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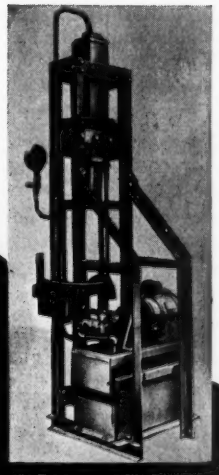

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A hydraulically operated testing rig with electric motor-driven pump.

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VINATEX P.V.C. COMPOUNDS

Compounds are supplied in the form of chips or uniform pellets for all applications including Extrusion, Injection Moulding, Gramophone Records and Calendered Sheeting.

VINATEX P.V.C. PASTES

These products are supplied pigmented or clear for coating, dipping and slush moulding. The range includes VINAMOLD Hot Melt Compounds for the manufacture of flexible moulds and VINAGEL modelling compounds and adhesive pastes.

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This washing machine agitator of phenolic material is a typical example of the large variety of mouldings made by the G.E.C.

G.E.C.

moulded plastics for industry

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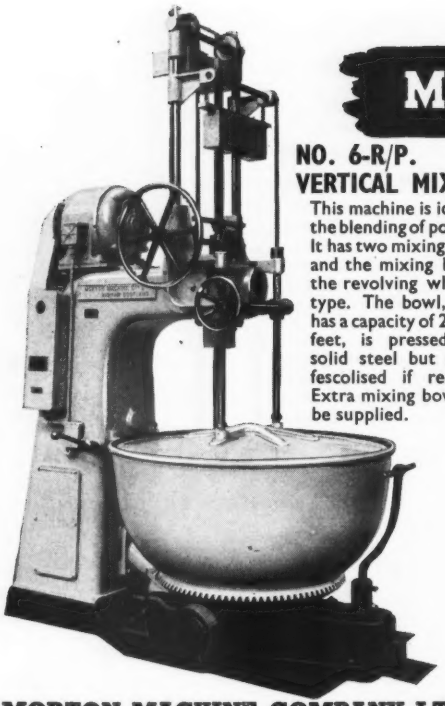

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NO. 6-R/P. VERTICAL MIXER :
This machine is ideal for the blending of powders. It has two mixing speeds and the mixing bowl is the revolving wheelout type. The bowl, which has a capacity of 26 cubic feet, is pressed from solid steel but can be fescolised if required. Extra mixing bowls can be supplied.

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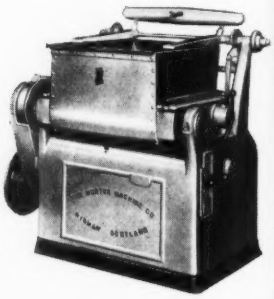
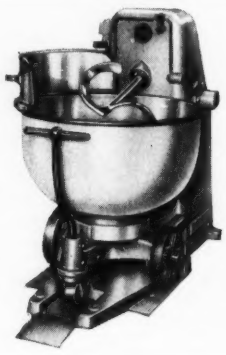
Range: 5 pints to 170 gallons.
Single or two speed.
Can be adapted for Vacuum and for pressure.
Tilting or non-tilting types.
'Z' type or Naben type Blades can be fitted.



HANDARM KNEADERS :
This type of machine can be supplied in five sizes ranging from 140 lbs. to 700 lbs.
The Mixing Bowls are wheel-out type and can be arranged so that they can be lifted clear of the undercarriage.
Hinged and Balanced Cover can be fitted if required.



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Streetly versatility is demonstrated in this trayful of mouldings, each made from a different material:

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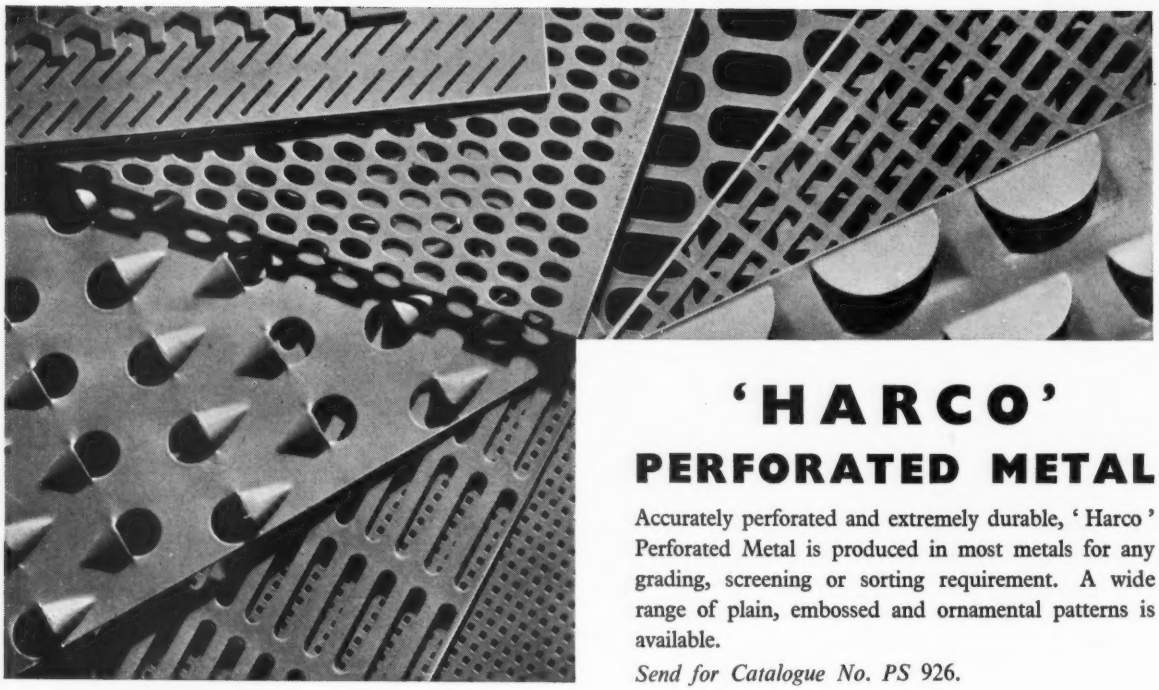

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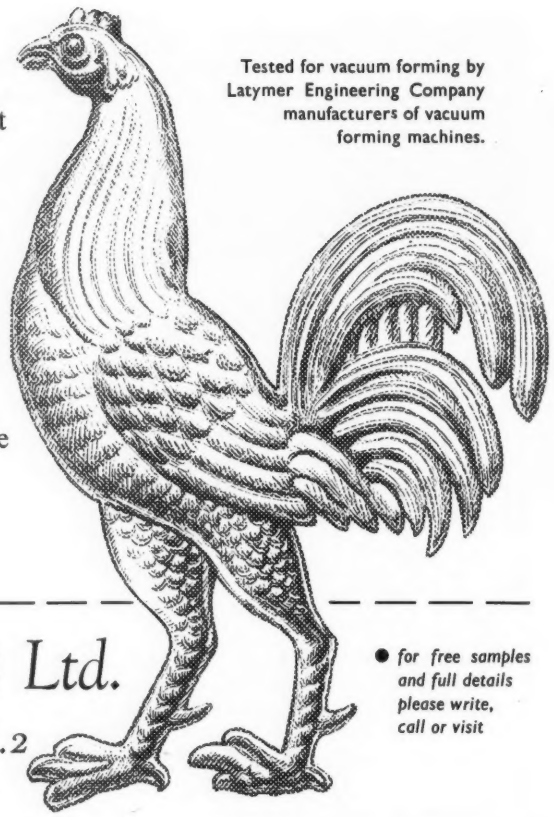

Tested for vacuum forming by Latymer Engineering Company manufacturers of vacuum forming machines.

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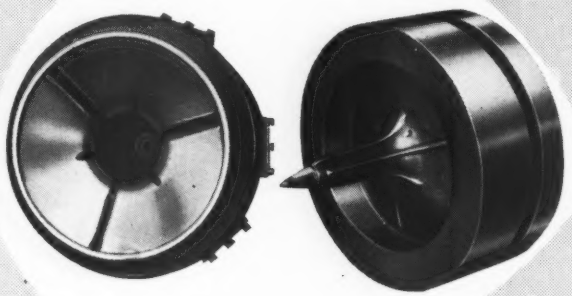

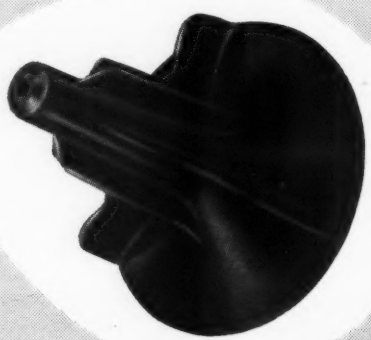

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DESIGNED FOR RELIABILITY AND MAXIMUM PRODUCTION
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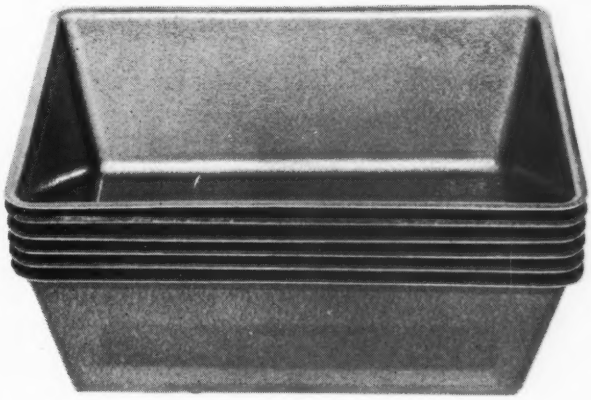

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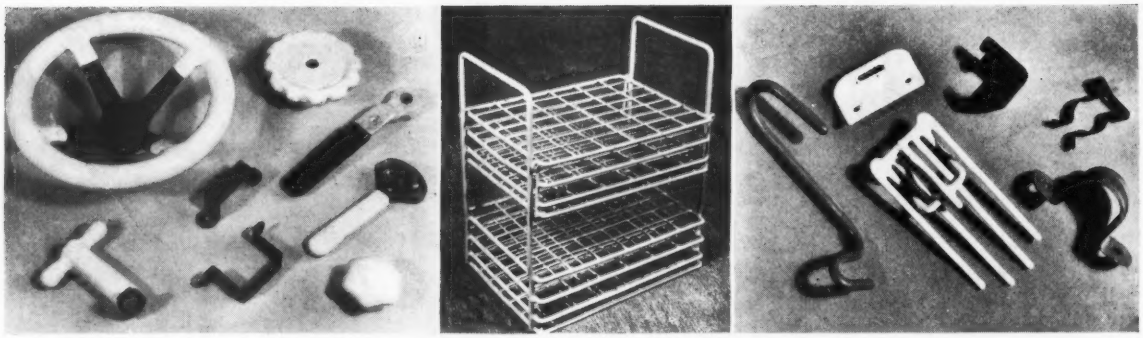

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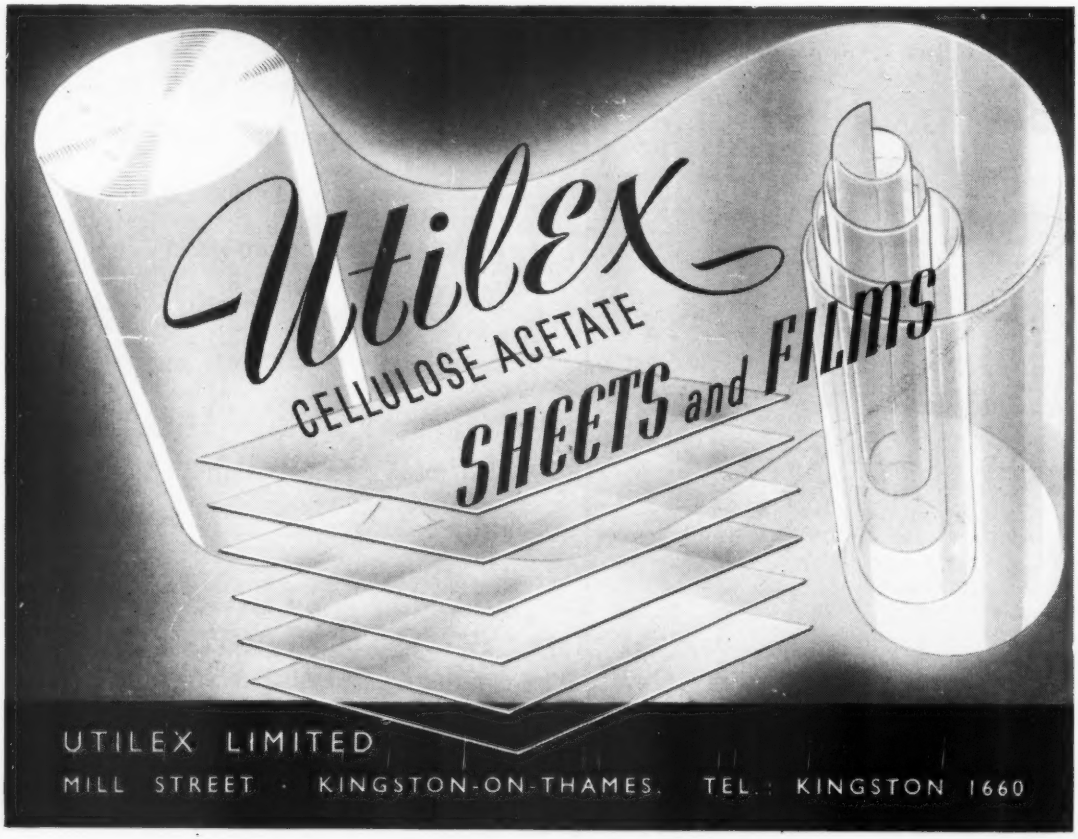

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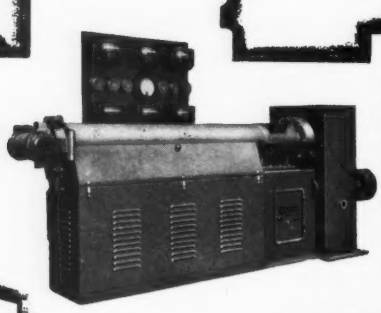
90 mm. Plastics Extruder



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With hand-operated cooling device, or with automatic cooling device and two finger Pyrometer regulator for Special Purpose

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For Pay-in or Take-out of medium or large size Cables, to Extruders, Paper Lappers, etc. Standard Sizes No. 1 for Cables ⅛in. to 2in. maximum Traction Effort 900 lbs. No. 2 for Cables 2in. to 4 in. maximum Traction Effort 3,300 lbs. Speed Ratio 1 to 30 (Stepless Variable).

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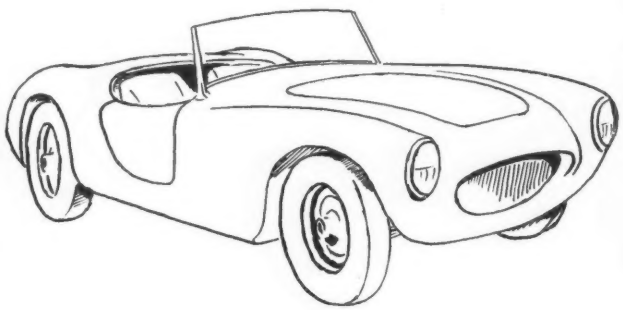

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PLASTIC MOULDINGS
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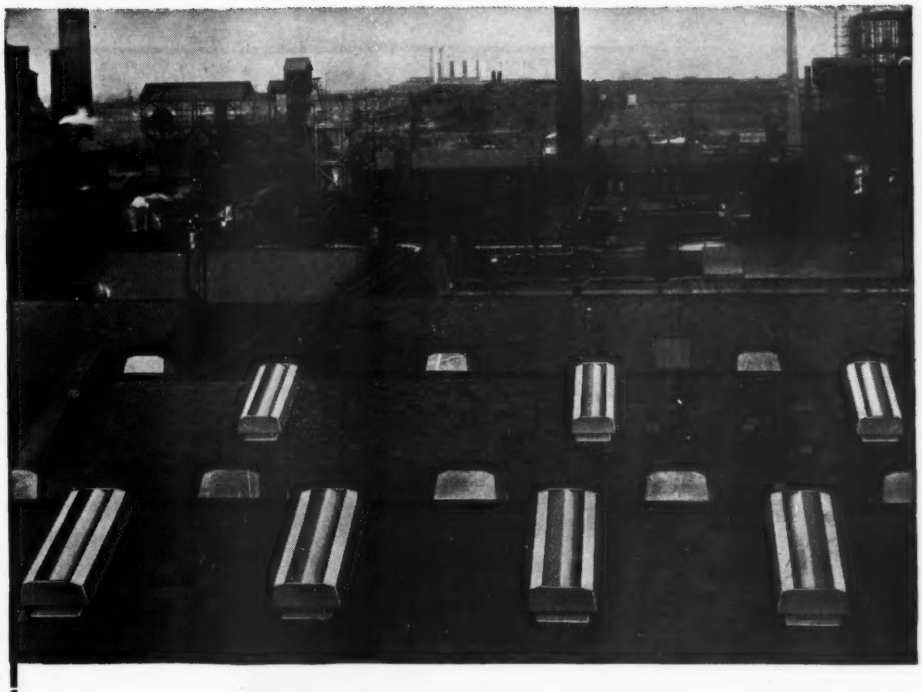

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At the Power House of the North Thames Gas Board's Tar and Ammonia Products Works, Beckton, a complete, robust ventilation system was required to withstand effects of the chemical laden atmosphere. A survey by our technical staff showed that, for good working conditions, the air within the Power House should be completely changed every three minutes. The Colt SRC/3080 Controllable High Duty Roof Extractor Ventilator of anti-corrosive hardened aluminium was ideally suitable for this problem, providing a natural yet fully controllable extract system, without the running costs, maintenance and wear and tear of a mechanical system. It was estimated that twenty of these Ventilators were required. These were supplied and fitted by Colt. Results have since proved to be an unqualified success and confirmed all original calculations.

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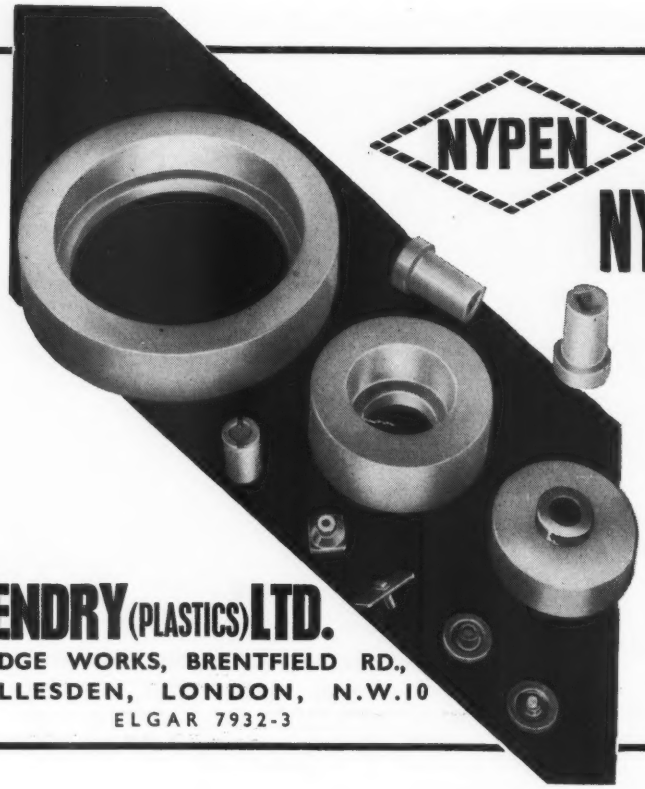

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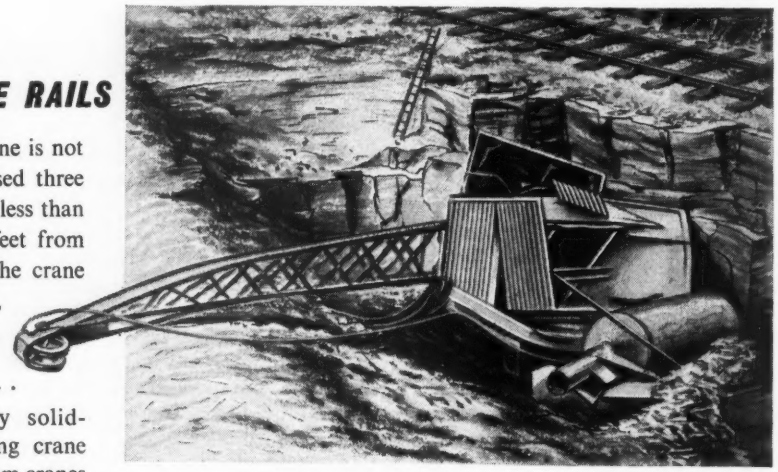

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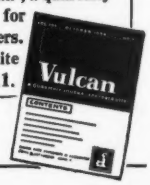

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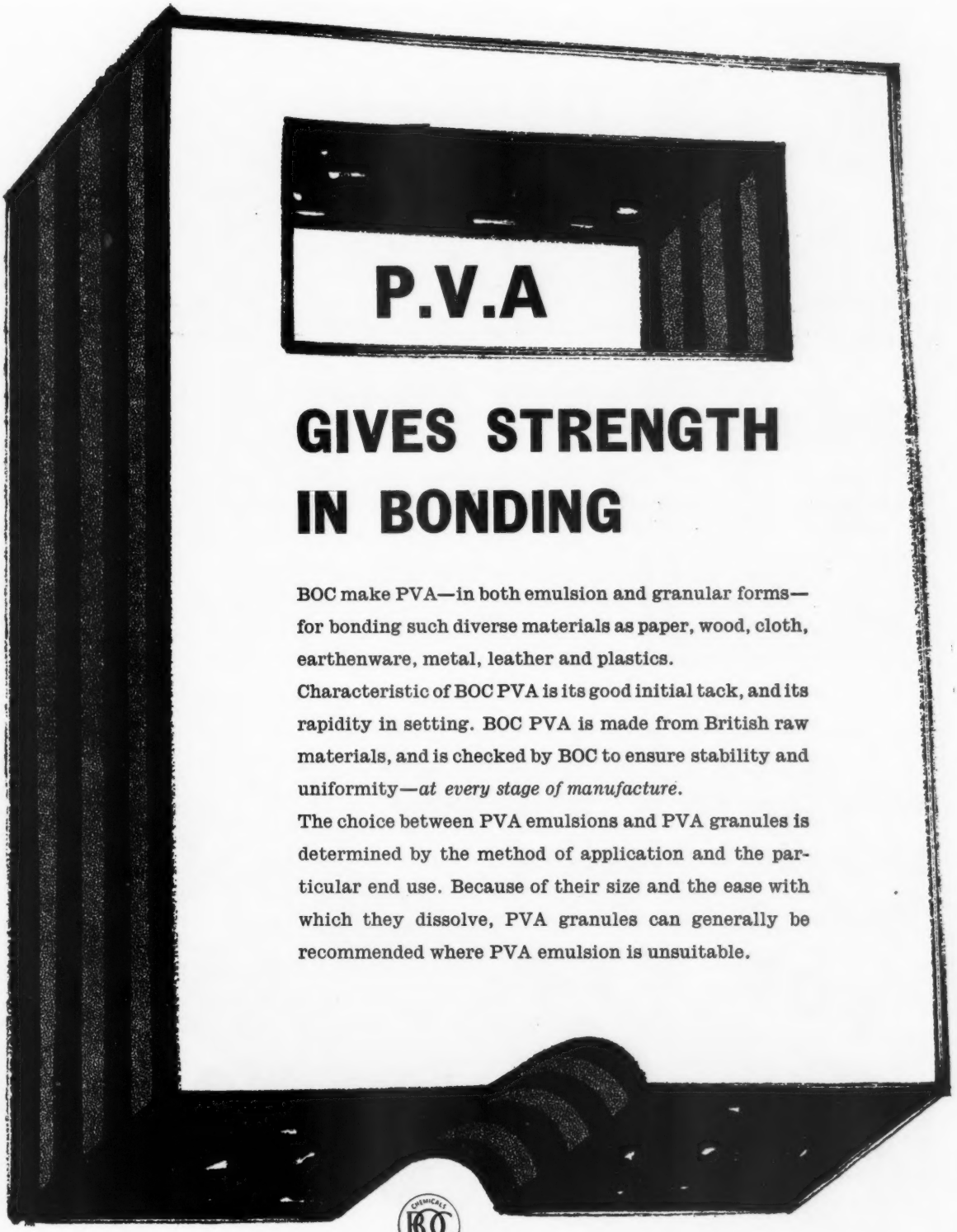

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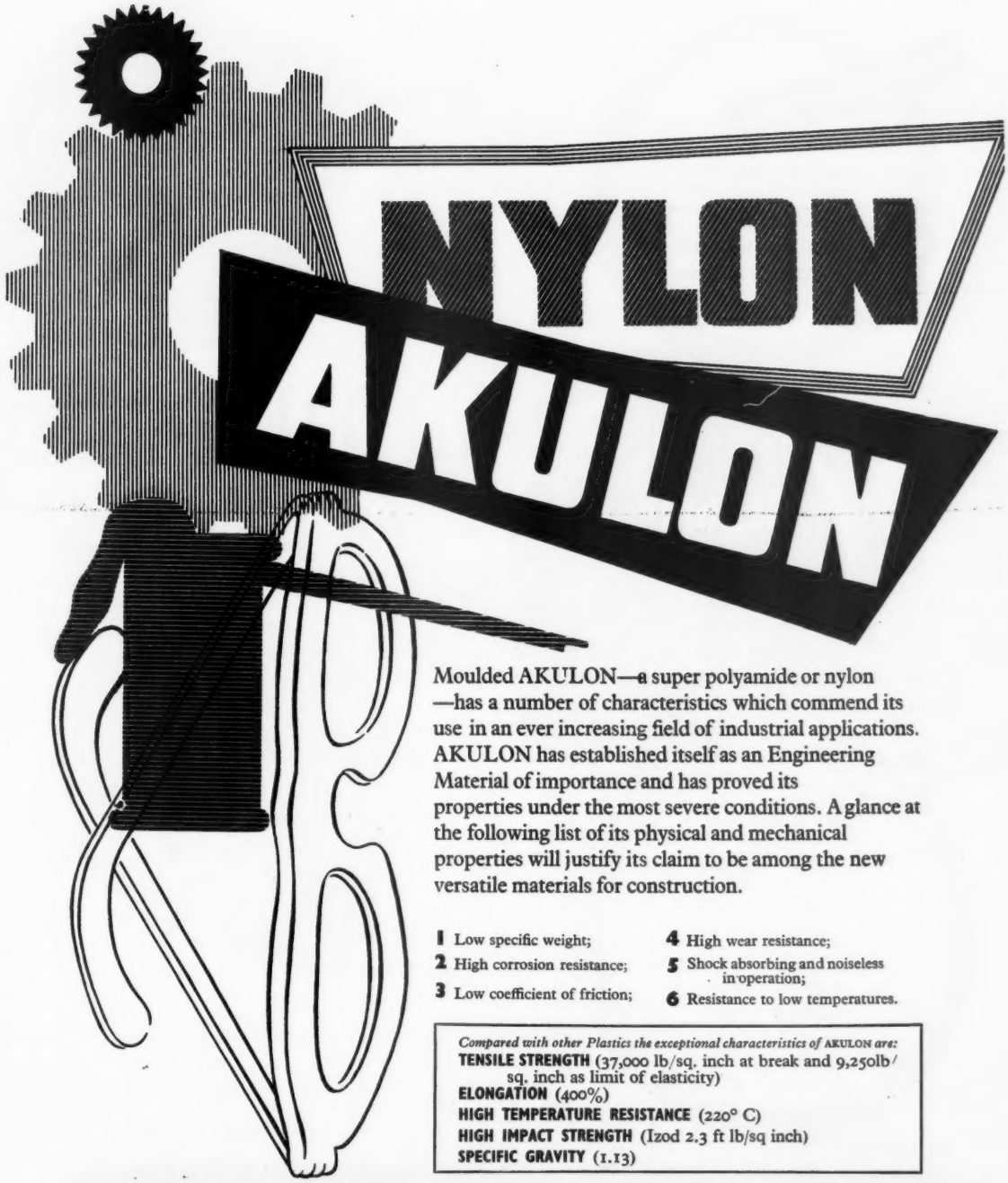

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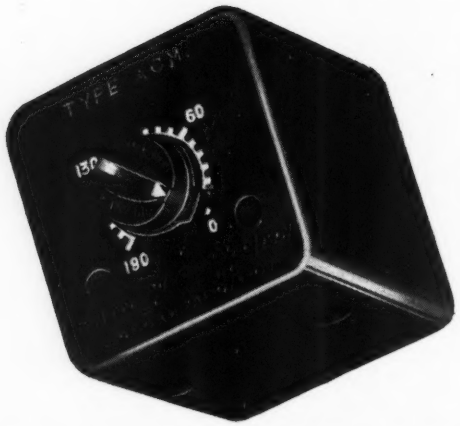

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The moulding shown was made to the specification of Messrs. R. MACLAREN & Co., Ltd. of Glasgow.

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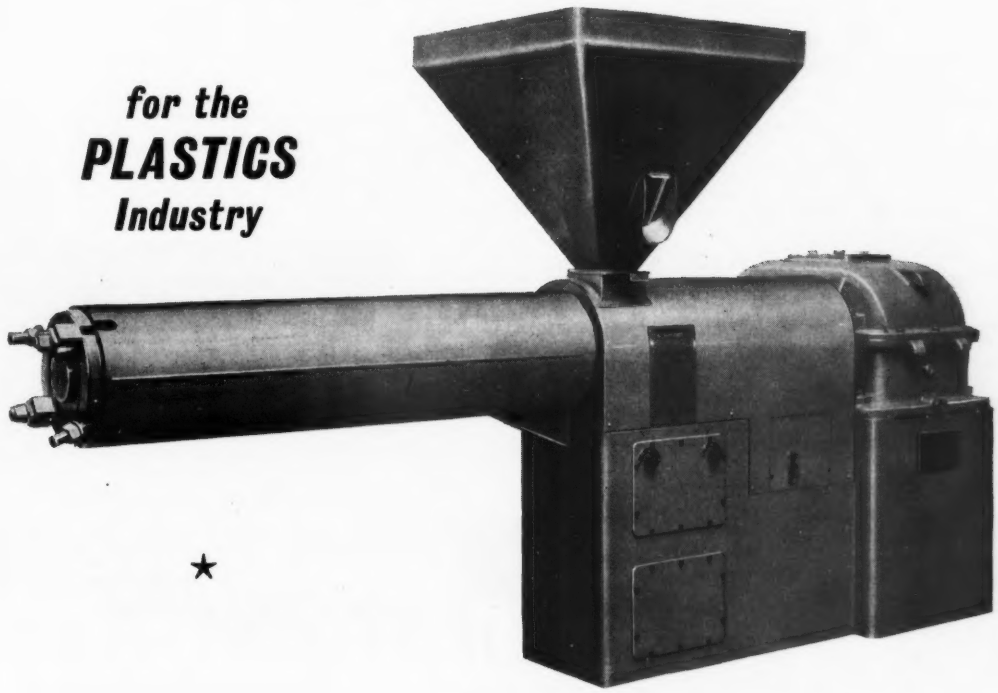

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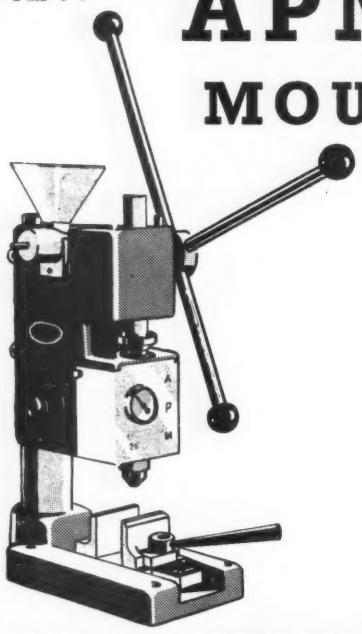

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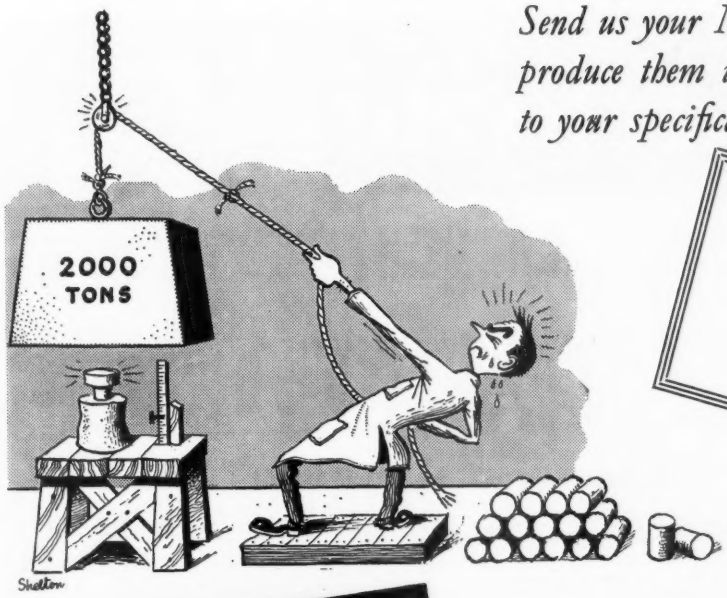

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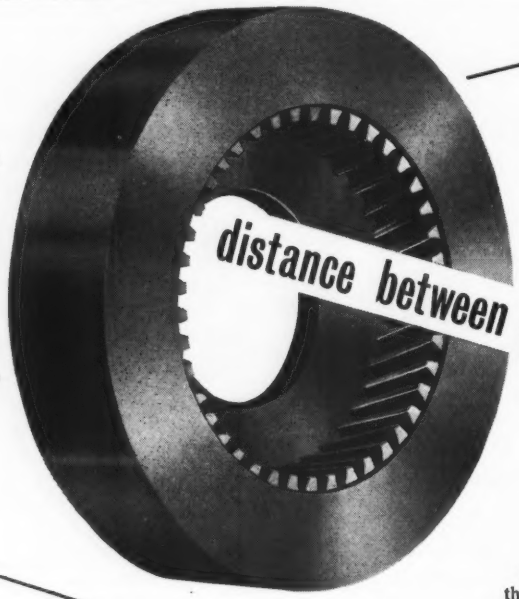

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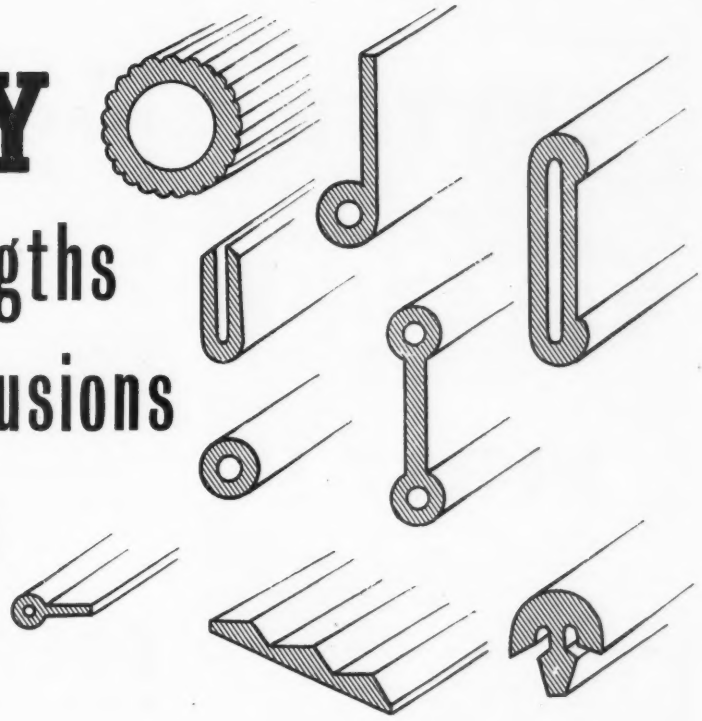

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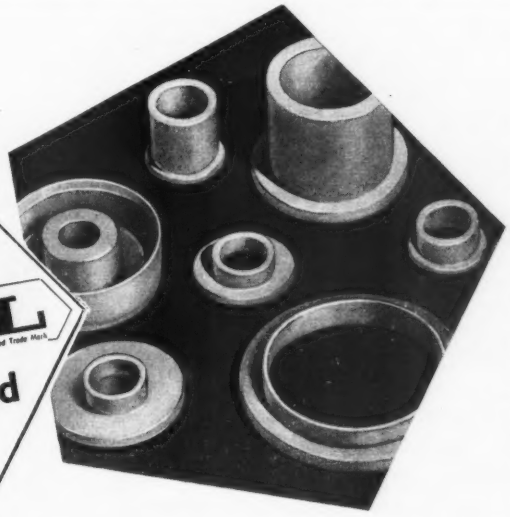

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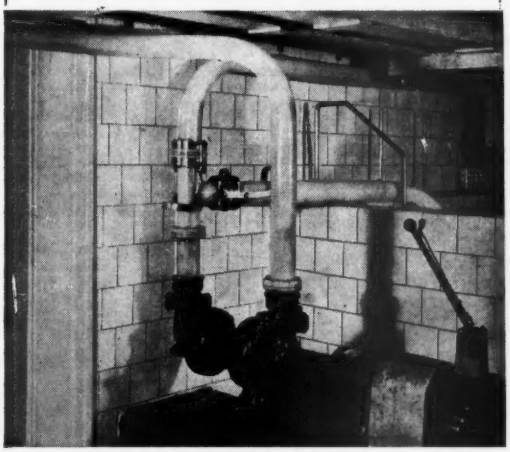

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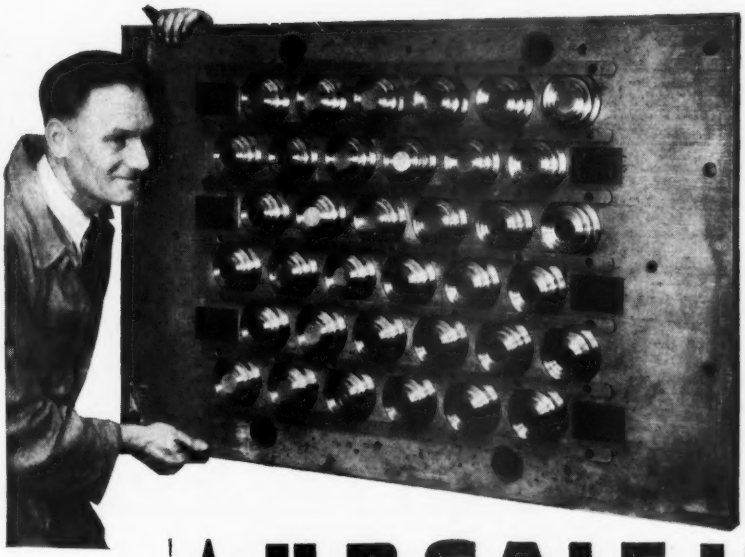

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DIPPING : OXYTHENE Vinyl Organosols are now being extensively used for wire basket coating, no drip dipping when strong scuff-resisting finish is obtained, varied end products including dish-washer baskets, and dish racks and brackets, electrical wiring, gloves and strong covers for the motorcar and furniture industry.

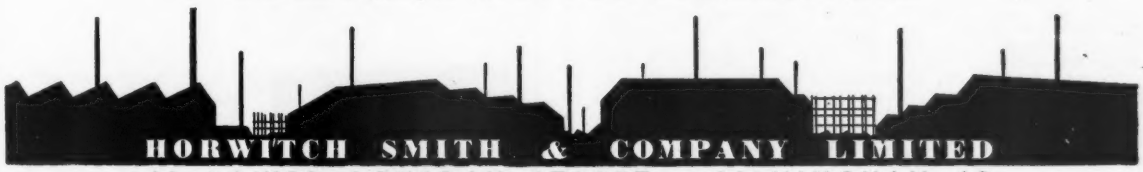
SPREADING : OXYTHENE Vinyl Plastisols and Organosols may be spread coated, textiles and paper are typical uses.

MOULDING : OXYTHENE Vinyl Plastisols and Plexigels are used for slush and dip moulding, doll and doll parts, toys, sparking plug covers, electrical components, novelties, puppets, boats, light sockets, expansion gaitors, are all illustrations of these applications.

CASTING : OXYTHENE Standard Vinyl Plastisols in liquid form may be readily poured and easily cast into film sealants, ceramic pipe joint threads, potting joints, statue making, etc.

TROWELLING : OXYTHENE Standard Vinyl Plastisols are being extensively used for trowelling on to chemical plant vessels of all types, tank linings and sealing joints.

The Horwitch Smith Laboratories have formulated compounds for many end uses and methods of application. We will be pleased to assist you with your products.



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IMPERIAL CHEMICAL INDUSTRIES

RECORD GROUP SALES

The twenty-eighth Annual General Meeting of Imperial Chemical Industries, Ltd., was held on June 16 in London.

Dr. Alexander Fleck, the chairman, in the course of his speech said:—The consolidated sales of the Group, after deducting the value of the sales made by our new subsidiaries, have increased from £282 millions to £327 millions—an increase of £45 millions or 16% over the figure for 1953, itself at that time the highest in our history. The Company's home sales and direct exports each increased by approximately the same percentage.

I should like most specially to draw your attention to the table of price indices in which the changes in home trade prices of the Company's products are compared with other significant indices. I am sure you will agree that the comparison shows the Company's prices in a very favourable light. Since 1938 the cost of our raw materials has risen by 272% and the earnings of our workers have risen by 202%. For the same period the Board of Trade wholesale price index increased by 225%. In comparison with these increases (each of which exceeds 200%) the prices at which I.C.I. sells its products in the home market have risen by only 91%. This, I think you will also agree, shows the remarkable success which has attended the Company's policy of keeping its selling prices as low and as stable as possible. Low and stable prices encourage our customers to use more of our products.

Between 1953 and 1954 the Company's price index for home sales has moved up by one point only, and the increase in the value of our home sales during this period is therefore almost entirely due to increase in volume. The consequential increase in profit for 1954 is also attributable to increase in volume, coupled with improvements in efficiency due to Work Study and other factors.

The Company will continue this price policy and will aim not only at absorbing increased costs but, wherever practicable, at seeing that reductions in costs resulting from improved methods and greater efficiency are reflected in lower prices to its customers. Let me emphasize, however, that the price indices I have quoted are averages, and that it may not be possible in all cases to avoid an increase in price; in fact, I am sure that some readjustments upwards in some of our products will almost be inevitable. This is particularly so where raw materials, fuel and freight represent a large proportion of total costs. We are glad to play our part with others first of all in striving after methods of increasing productivity and then of passing on the results of such efforts. Contributions of this nature will, we hope, come from all branches of British industry. It is by such contributions, widespread as they should be, that each one of us must earnestly hope that effective action will soon be taken to prevent the inflation which is threatening to erode our material standards.

Exports and Overseas Interests

At £67½ millions the Company's exports were a record and showed an increase of 16% over the previous year. This increase in the value of exports represents a still greater rise in the volume of exports.

I regard this high export figure as a particularly significant feature of the year's trading, because it has been achieved in the face of keen competition from other major chemical producing countries and in spite of the strong demand for our products from the home market. Indeed, if indirect exports were included, it would be seen that more than 40% of the Company's production now goes abroad.

A number of our overseas companies are now substantial manufacturing entities, and when I tell you that the total turnover of the Company's overseas business (both local manufacture and imports from the United Kingdom) through subsidiary and associated companies is now approaching in value I.C.I.'s sales in the United Kingdom, I am sure you will appreciate how important our overseas interests are.

It is worthy of note that the net I.C.I. Ordinary dividend, requiring just under £8 millions, represents rather less than 37% of the net income of the year, £21¾ millions. Furthermore, this Ordinary dividend, requiring £14 millions before deduction of income tax, represents a return of 4.8% gross on an employed capital of £295 millions, which according to the Company's balance sheet is the employed capital belonging to the Ordinary stockholders.

Current Year's Trading

As regards current trading, I am pleased to tell you that in 1955 we have so far experienced a period of great activity. The general level of both home and export sales is well above that of the corresponding period of last year. In fact, I do not think I can do better than repeat the words that I used to the stockholders last year and say that " So far this year the Company has enjoyed in common with other industries in this country, a period of expansion, and the prospects are in general good."

This, of course, assumes that the very serious strikes which so gravely affect our national economy are not allowed to recur and that our united efforts can be successfully directed to minimising, if not eradicating, the deplorable setback which the country as a whole has suffered.

On the other side of the account, I would tell you that the increased level of sales this year, to which I have referred, is due to some extent to production now coming forward from new plants which have recently been completed. Competition, particularly overseas, is strong, but we are confident that, provided our prices do not have to be put up because of rising costs at home, we can meet this competition and make still further progress.

The report was adopted.

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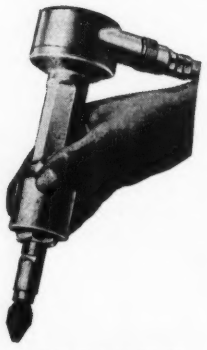

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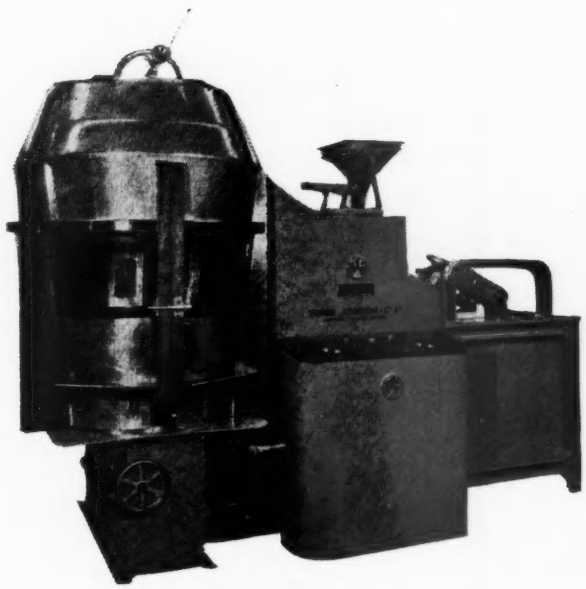

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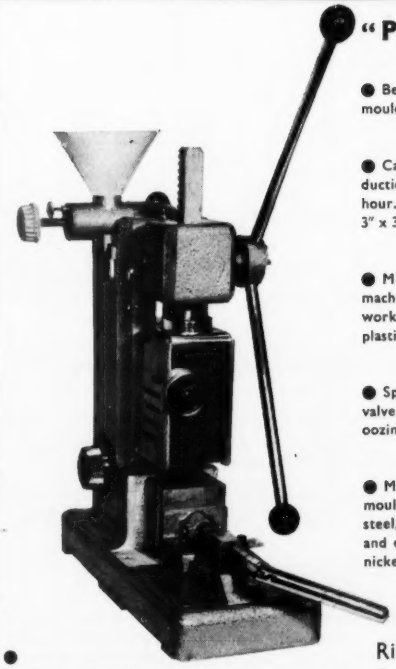

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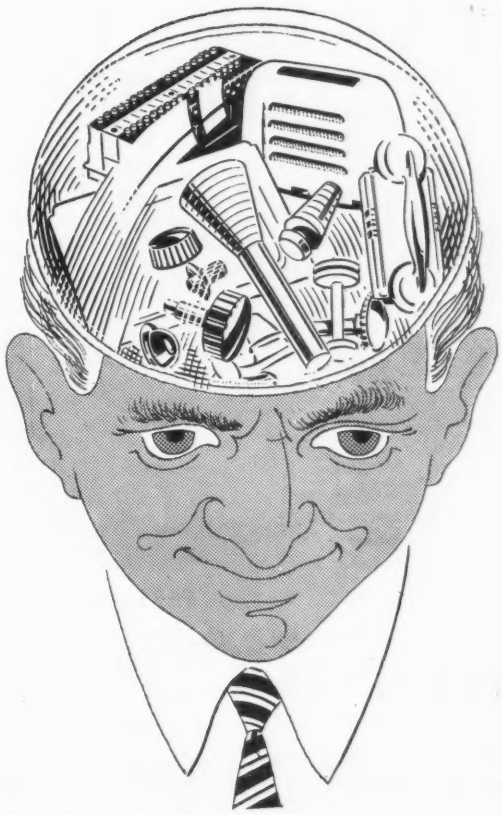

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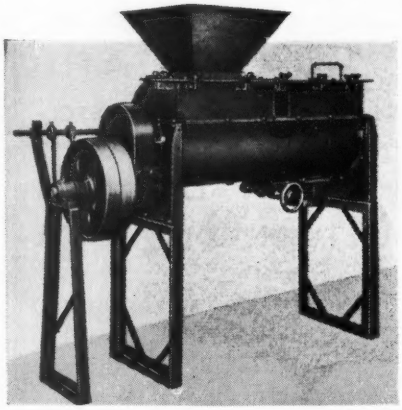

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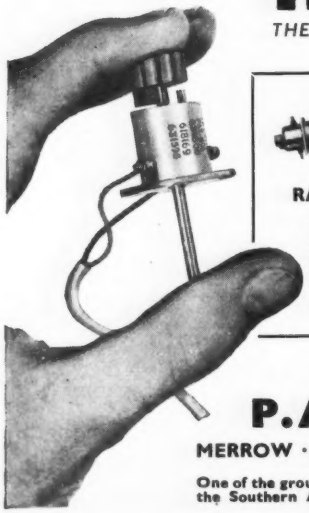

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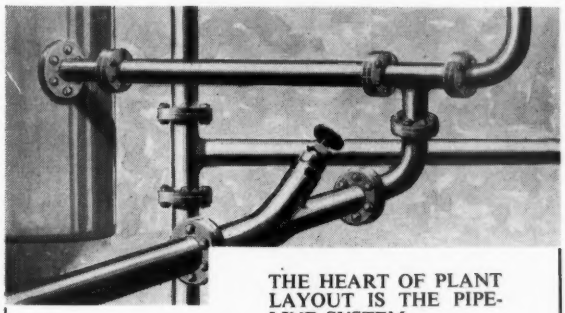

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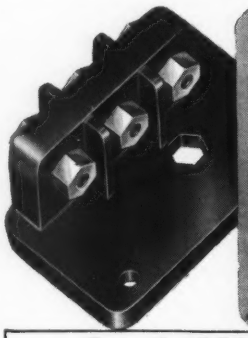

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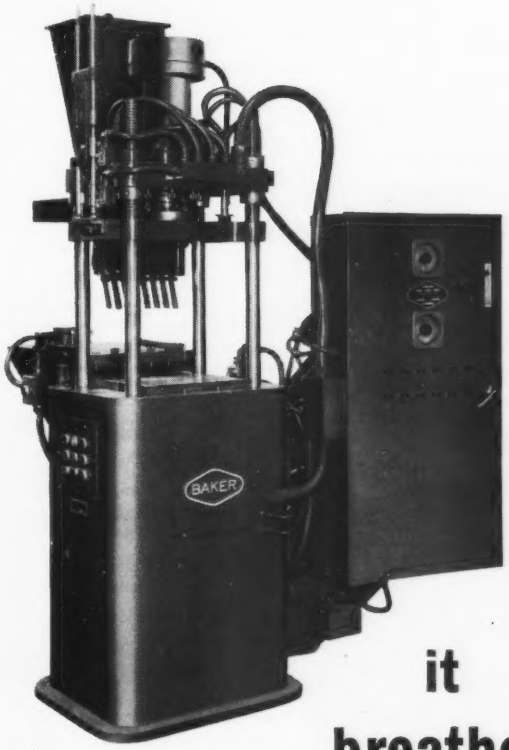

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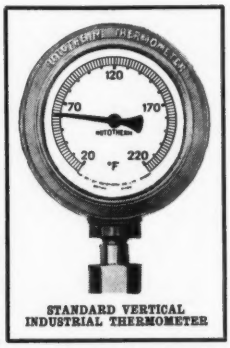

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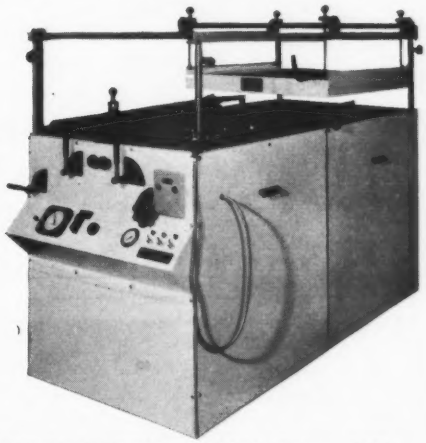

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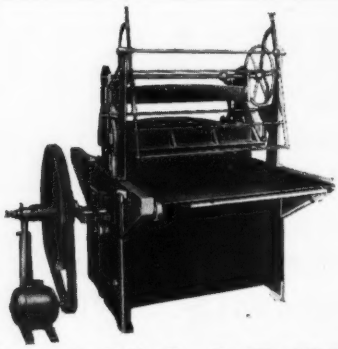

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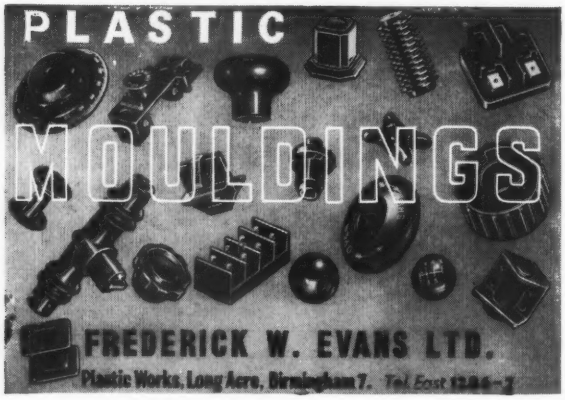

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Raw Material (contd.)

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90,000 reels P.V.C. insulated wire (20 G.), 1,000-yd. reels, weight 10-11 lb. (P.V.C. 3-4 lb.), will sell at near scrap price.

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RAW MATERIAL WANTED

WANTED, Polythene scrap. Write to Box P7416, care of "Plastics." zzz-0322

SURPLUS STOCKS of thermosetting and thermoplastic moulding powders wanted. Send details Box P056, care of "Plastics." zzz-481

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WE BUY
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CELLULOSE ACETATE, virgin, first quality, spot lots, colours ebony-black, blue, amaranth, green, grey, flow medium-hard or hard, wanted. Reply, Box P166, care of "Plastics." 216-35

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Raw Material Wanted (contd.)

NYLON SCRAP, ground, various light colours wanted. Please offer with samples. Box P1624, care of "Plastics." 216-48

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ASSISTANT TO TECHNICAL DIRECTOR required for firm manufacturing p.v.c.-coated fabrics, etc., this is a fine opportunity with prospects for a person with wide experience and thoroughly conversant with all aspects of the various processes. Apply, giving full details of previous experience, age and salary required, to Box P154, care of "Plastics." 216-1139

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(1) Extrusion Engineers with setting up experience capable of working without supervision.
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Good salaries and excellent prospects with pension scheme benefits for the right men.
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Write experience, qualifications, present salary, Box P162, care of "Plastics." 216-40

A LARGE INTERNATIONAL ORGANIZATION with rapidly expanding interests in plastics has a vacancy in its London office for an Honours Graduate Chemist to undertake market development work on thermoplastic resins.
Applicants should be about 30 years of age and should have some experience in the processing and/or marketing of thermo-plastics. A knowledge of foreign languages will be an asset as opportunities for foreign travel will arise after suitable training. The successful candidate will require to have the necessary drive and initiative to build a commercial career in a large growing organization which offers considerable scope for advancement. Generous pension scheme.
Write, giving full details experience, qualifications, age, etc., to Box ZQ835, Deacon's Advertising, 36 Leadenhall St., E.C.3. 217-x3485

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ASSISTANT TO FOREMAN of injection-moulding plant wanted, experienced man, able to accept responsibility. Box P169, care of "Plastics." 216-33

LARGE ORGANIZATION has a vacancy for a technologist, aged 25-35 years, to be responsible for research and development work on laminated plastics. Applications are invited from men with chemical or engineering qualifications of at least H.N.C. standard. The post will be at a factory in the Wigan area, but there will be an initial training period at another factory in the group. Salary in accordance with ability and qualifications.
Apply in first instance, in writing, to Box P168, care of "Plastics," giving details of age, education and experience. 216-34

TURNER BROTHERS ASBESTOS CO., LTD., Hindley Green, near Wigan, require a technical assistant to the manager of a plastics production department. This is an excellent opportunity for a keen man to join an expanding organization and to establish a small section responsible for supervising process control and inspection of products manufactured from high and low pressure moulded thermosetting materials.
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Apply in first instance, in writing, to personnel officer, giving details of age, education and experience. 216-8

WORKS MANAGER required, plastic injection moulders, undergoing re-organization. Generous salary offered to suitable applicant with proven record.
Write giving qualifications, E.V.B. Plastics, Ltd., Brighton Rd., near Redhill, Surrey. 216-9

PURCHASING AND PROGRESS CLERK able to work on own initiative required by plastics fabricators and moulders. H. Comoy and Co., Ltd., 86-92 Pentonville Rd., N.1. 216-7

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Situations Vacant (contd.)

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Write stating qualifications, E.V.B Plastics, Ltd., Brighton Rd., near Redhill, Surrey. 216-10

DRAUGHTSMAN required for the design of plastics mouldings. Must have sound knowledge of both compression and injection methods and experience with the development of new products. Write, giving full details of experience and salary required to Box P1637, care of "Plastics." 216-61

GENERAL MANAGER REQUIRED.

MUST HAVE HELD SIMILAR OR SENIOR ADMINISTRATIVE POSITION.

FIRST-CLASS KNOWLEDGE OF PLASTICS AND EXTRUSION INDUSTRY NECESSARY.

PENSION SCHEME.

HOUSING ACCOMMODATION WOULD BE PROVIDED IF NECESSARY.

THE POSITION OFFERS CONSIDERABLE SCOPE FOR THE RIGHT MAN.

APPLICATIONS GIVING FULL PARTICULARS TO

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MARLEY EXTRUSIONS, LTD.,

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217-1148

VICKERS-ARMSTRONGS (AIRCRAFT) LIMITED REQUIRE:—

(s) REINFORCED PLASTICS — LABORATORY ASSISTANTS required for interesting work on the development of plastic structures for Guided Weapons. Academic qualifications, though desirable, are not essential, but some practical experience of work with glasscloth and low pressure resins is necessary.

Applications, quoting date and prefix letter of advertisement to: Employment Manager, Vickers-Armstrongs (Aircraft) Limited, Weybridge Works, Weybridge, Surrey.

Weybridge is 30 minutes from London on the main Waterloo-Portsmouth line.

Additional 'buses operate to and from the works at starting and finishing times.

Canteen facilities.

Applicants should be in a position to arrange their own housing accommodation. Assistance can only be given with individual lodgings.

Holidays already arranged by applicants for this year taken into account.

216-23

POLYTHENE FILM EXTRUSION. Assistant plant manager required, age 25-35. Salary according to extent to which the following desired qualifications can be fulfilled:—

(1) University graduation in chemistry or engineering.
(2) Experience in extrusion.
(3) Experience in polythene extrusion.

The last qualification is desirable but by no means essential.

Pension scheme in operation. Prospects for fairly rapid advancement exist for man with right potential.

Write, giving details of experience, age and salary required, to Box P1634, care of "Plastics." 216-57

DRAUGHTSMAN experienced in design of compression and injection plastic moulds required by old-established company on north-west coast. The position offers interesting and varied work with excellent prospects to a capable and energetic man of about 30.

Applications, which will be treated in strict confidence, giving full details of previous experience and career to date, should be addressed to Box P1631, care of "Plastics." 216-60

WORKS MANAGER required by London company engaged in forming thermo-plastics, compression, low-pressure and polyester glass moulding and fabrication of laminates. Technical knowledge and practical experience essential in addition to managerial ability. Good salary and prospects for right man keen to create a sound position for himself in well-established small firm where every encouragement is given to development and expansion. Superannuation. Box P1632, care of "Plastics." 216-59

A LARGE MANUFACTURING COMPANY of P.V.C. situated in the Midlands require the services of a first-class foreman for P.V.C. calendering department. Comprehensive knowledge of plastics trade essential.

Non-contributory pension and life assurance scheme in operation.

Apply Box P1633, care of "Plastics." 216-58

Situations Vacant (contd.)

CHEMIST. A vacancy exists for a technical officer to work upon research and development of industrial plastics.

Applicants must possess technical qualifications of H.N.C. or above, and be within the approximate age range of 25-35. The successful applicant will join a small department. Within about nine months the department will be transferred from Chapel-en-le-Frith, Derbyshire, to Hindley Green, near Wigan, Lancashire. There is a contributory pension scheme in operation.

Applications in writing, stating age, experience, qualifications and salary required, and quoting reference W/CP, to Personnel Manager, Ferodo, Ltd., Chapel-en-le-Frith, Via Stockport. 217-1145

EXTRUSION—P.V.C. AND POLYTHENE CABLES. Charge-hand wanted with full technical knowledge, long experience and drive, small modern shop, good opportunity and conditions for really first-rate man.

State age, qualifications, previous jobs, references, salary to "E.C.C.," care of Dixons, 1-9 Hills Place, Oxford St., London, W.1. zzz-295

A TECHNICAL ASSISTANT in development work on resin/fibreglass materials, the manufacture of prototypes and the development of new methods is required by Ashdowns, Ltd., Plastics Manufacturers, St. Helens, Lancs. The appointment is for a man aged between 26 and 32 years of age who possesses a Higher National Certificate in Mechanical Engineering, who may have had some experience in development work already.

The appointment is a permanent one, progressive and pensionable and the starting salary is commensurate with age, qualifications and experience.

All reasonable expenses are paid to applicants asked to attend for interview. Replies should be sent to The Secretary, Ashdowns, Ltd., St. Helens, Lancs. 216-2

COMMERCIAL PLASTICS, LTD., have a vacancy for an assistant Sales Manager/Senior Representative with selling experience of polythene and PVC pipes for plumbing, chemical plant and agricultural purposes. Excellent prospects of advancement, good salary in accordance with experience and membership of Pension and Life Assurance Scheme for suitable applicant. All applications will be treated in strict confidence and should be addressed to:—

Sales Manager, Commercial Plastics, Ltd., 1 Avery Row, Grosvenor Street, London, W.1. 216-4

REQUIRED, an experienced man capable of taking charge of compression moulding shop, permanent and well paid position. Apply "Seaforth," Watchett Works, Oakhurst Road, Southend-on-Sea. 217-1146

NEW ZEALAND. Opening exists for experienced Plastics Engineer, preferably with knowledge of extrusion methods but to operate special machinery, training for which will be given in England. Fare paid out, and successful applicant will be required to enter into at least two years' service contract. Salary £750 per annum. 40-hour week. Two weeks' paid holiday. Inquiries in writing to Box No. 579, Sells, Ltd., Brettenham House, Strand, W.C.2. 217-1147

CHIEF TECHNICAL MANAGER required by Ashdowns, Ltd., St. Helens, Lancashire, who are a company manufacturing plastics and who are part of the Pilkington Group.

Amongst other operations, Ashdowns manufacture laminated sheet for electrical insulation, gears, bearings, etc., form thermoplastic sheet, and produce resin fibreglass laminates by a variety of processes and for a variety of purposes.

The successful candidate will be responsible to the Managing Director for the investigation and development of all new processes and for all technical services.

Applicants must be the possessor of a good scientific degree and must have had experience relating to the plastics industry. This is a senior position within the company, offering good prospects. A contributory pension fund is in operation. Applicants should write giving full details of age, qualifications and experience to the Secretary, Ashdowns, Ltd., St. Helens, Lancashire. 216-14

TECHNICAL SERVICE REPRESENTATIVE required by manufacturers of plastics moulding materials for investigation of customer problems and technical development. He will be based in London but duties include visits to customers throughout the country. A.M.I.Mech.E. or near equivalent desirable and experience with plastics machines and materials an advantage. Salary according to age and experience.

Apply to Technical Service Manager, British Resin Products, Ltd., Devonshire House, Piccadilly, London, W.1. 216-24

DESIGN DRAUGHTSMEN. E. K. Cole, Ltd., Southend, have vacancies in their Plastics Division for mould design draughtsmen. Experience of injection, transfer and compression mould design essential.

Write, stating age, qualifications and experience to Personnel Manager. 216-26

MAN WITH INITIATIVE and previous experience required to take charge of nylon moulding section just commencing in established organization. Must be conversant with all phases of nylon moulding and be familiar with latest techniques and machines. Howard Clayton-Wright, Ltd., Wellesbourne, Warwick. 216-22

A THOROUGHLY EXPERIENCED PRACTICAL MOULDER required by progressive South Bucks company. Applicant must be fully conversant with all types of injection moulding materials, particularly nylon, and able to take charge of injection moulding shop. Assistance in housing offered. Full particulars to P163, care of "Plastics." 216-39

VACANCIES EXIST in the Adhesives Laboratories of the B.B. Chemical Co., Ltd., Ulverscroft Rd., Leicester, for assistant chemists. Qualifications required, B.Sc. degree or equivalent, knowledge of rubber and plastics an advantage. Reply to the Technical Director, stating age, qualifications, experience and salary required. Box P164, care of "Plastics." 216-38

Situations Vacant (contd.)

BECK KOLLER AND CO., LTD., SPEKE, LIVERPOOL, 19, manufacturers of Filabond polyester resins for glass-fibre reinforced plastics, have a vacancy in their Technical Service Laboratory for a demonstrator.

Applicants may be required to visit customers to demonstrate hot and cold laminating on a commercial scale.

Write, giving details of experience and salary required, to the Technical Director. 216-16

A PROGRESSIVE AND EXPANDING COMPANY require an experienced plastics technologist, preferably with engineering qualifications, with first-rate managerial ability, to be responsible for a new reinforced plastics department in South Wales.

The successful applicant will be expected to assess technical problems and to organize production economically in accordance with findings. Salary will be commensurate with responsibility and experience, particularly in the field of low-pressure laminates. Box P1629, care of "Plastics." 216-53

PLASTIC TOY PRODUCTION MANAGER. Large South American toy manufacturer offers position for manager of injection-moulding dept. in Brazil. Preferably familiar with doll mouldings. Excellent opportunity for man of proved ability. Generous salary part payable in England if desired, passage paid. Interviews in London. Replies treated strictest confidence. Box P161, care of "Plastics." 216-45

LARGE ORGANIZATION has a vacancy for a foreman to be responsible for the establishment and supervision of a plastics manufacturing division dealing mainly with the preparation and press-curing of thermosetting laminated materials. After a period of training with an associated company near Buxton the successful applicant will be expected to train and organize a labour force under the general direction of a departmental manager at a permanent location in the Wigan area. Initiative, practical ingenuity, and an understanding of labour control, are essential qualifications, together with a good educational standard and preferably experience in a related branch of the plastics industry. Salary in accordance with ability and qualifications.

Apply in writing to Box P1616, care of "Plastics," giving details of age, education and experience. 216-44

ASSISTANT WORKS MANAGER required by progressive plastics and rubber manufacturers in East Midlands. Successful applicant would be responsible to the works manager for supervision in all departments and would be required to work alternating day and night shifts.

Applications giving full details of experience and salary required should be addressed in strict confidence to Box P1617, care of "Plastics. 216-43

REPRESENTATIVE required for Midlands and North of England for plastic injection moulders. Technical (engineering) knowledge an advantage, also connection with user of mouldings, but not essential. Opportunity for live man prepared to work hard. Reply in first instance stating age, experience, etc., to Box P1618, care of "Plastics." 216-42

MALE laboratory assistant required for work on polyvinyl-chloride compound. Previous laboratory experience essential, experience on polyvinyl-chloride desirable. Age 22-26. Box P1638. J.H. 216-62

SITUATIONS WANTED

GENERAL MANAGER with considerable technical and administrative experience (injection and compression) seeks comparable post, London to Reading area. Box P1613, care of "Plastics." 216-29

INJECTION MOULDING Superintendent desires situation with small progressive company in London or suburbs. Development work or technical component moulding preferred. Capable of taking complete charge. Object of advertisement is future prospects. Box P1627, care of "Plastics." 216-x4492

PRODUCTION MANAGER, 17 years' experience compression and injection, desires change, London or Kent area preferred. Box P1625, care of "Plastics." 216-x4410

FOREMAN, toolmaker, assembly finishing, with initiative, desires progressive situation in London area. Box P1623, care of "Plastics." 216-x4659

TECHNICAL SALES REPRESENTATIVE. Advertiser engaged in technical capacity with large moulding company seeks position on sales side of the industry. Sound knowledge of compression and injection mouldings and materials. Box P1620, care of "Plastics." 216-x4602

TIME RECORDERS

FACTORY TIME RECORDERS. Service rental. Phone, Hop 2230. Time Recorder Supply and Maintenance Co., Ltd., 157-158 Borough High St., S.E.1. 221-1102

BOOKS AND PUBLICATIONS

THE THEORY OF POLYMERIZATION, by H. R. Fleck, M.Sc., F.R.I.C. Full examination in simple language with examples, calculations and exercises of this fundamental aspect of the chemistry of plastics. Illustrated, 144 pages, 10s. 6d. net from booksellers, or 11s. by post from the publishers, Temple Press Ltd., Bowling Green Lane, London, E.C.1. zzz

PLASTICS, SCIENTIFIC AND TECHNOLOGICAL (3rd edition), by H. R. Fleck, M.Sc., F.R.I.C. A completely revised edition of a recognized standard work on the chemistry and technology of plastics. ". . . should be in every technical library."—Times Review of Industry. Illustrated, 400 pages, 40s. net from booksellers, or 40s. 9d. by post from the publishers Temple Press Ltd., Bowling Green Lane, London, E.C.1. zzz

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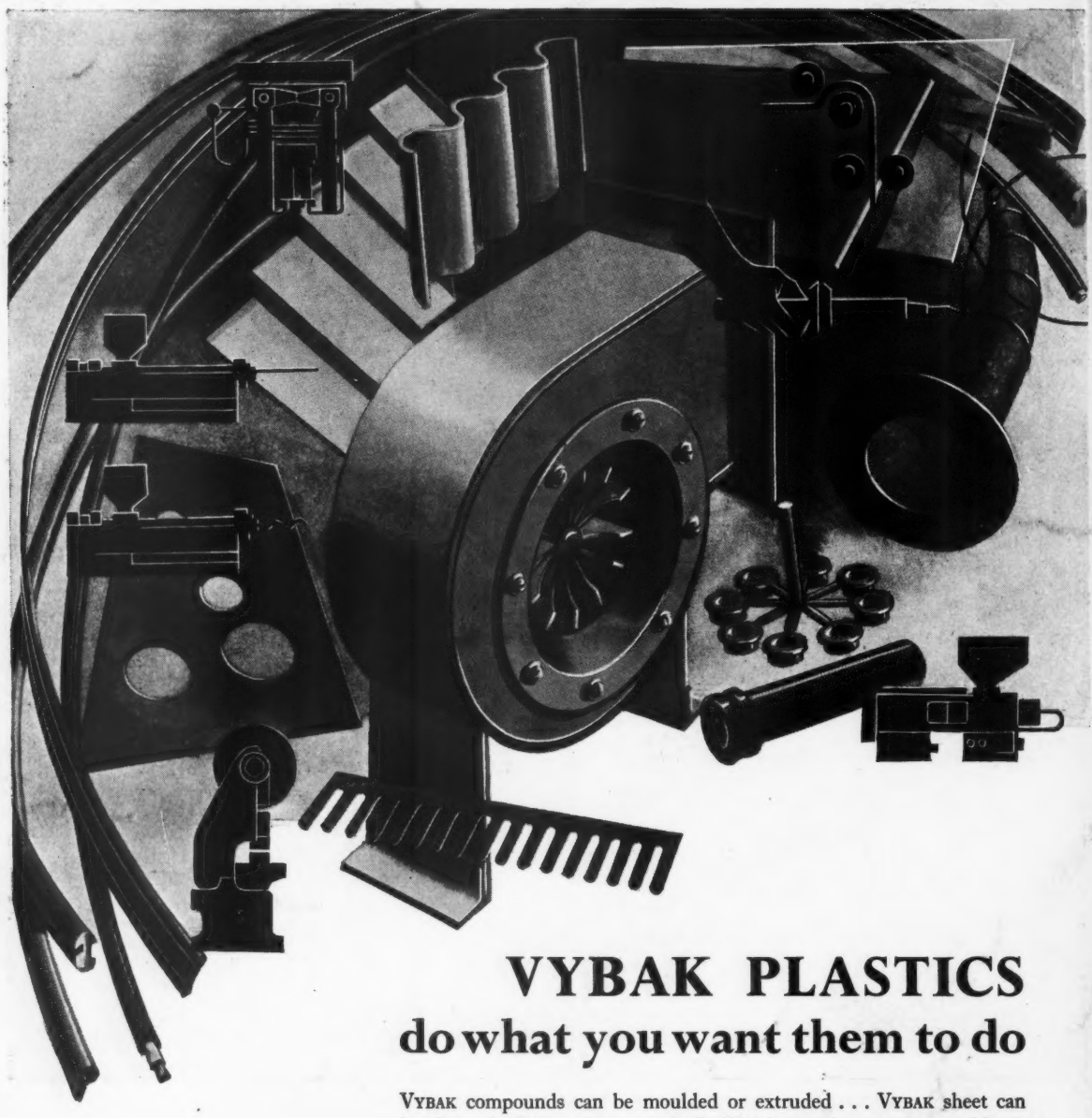

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